## SANITARY CHEMICALS

Suppliers of fine

ESSENTIAL OILS

AROMATIC CHEMICALS

PERFUME SPECIALTIES

to the soap industry



**UNGERER & COMPANY** 

161 Sixth Ave.

New York



A truly remarkable synthetic version of the natural Parma-Violet note!

This Chuit, Naef specialty embraces all the most desirable characteristics of the ideal Violet basic note. It is non-irritating—contains no methyl heptine carbonate—very fresh and tremendously powerful.

PARMANTHEME can be used in any type toilet preparation, being particularly effective in lipsticks, creams and perfume extracts.

Additional Data and Quotations on Request

Firmenich + Co.

5 FIFTH AVE., NEW YORK . Chicago Uttice: 512 NURTH AUCHIGAN



Get ALL THREE with one labor cost ... CLEENAX cleans, polishes and seals in one operation. And since 95% of maintenance expense is labor cost, it's easy to see how Fuld's CLEENAX saves money! CLEENAX action reduces the number of cleanings required . . . again saving labor cost! That's why CLEENAX is the demand cleaner among maintenance men who watch their expenses carefully! CLEENAX triple-action removes dirt and accumulated wax at the same time it applies fresh wax to the surface. Pores are sealed. Will not injure paint or surface on walls, woodwork

702 South Wolfe Street, Baltimore 31, Md. 2444 East 8th Street, Los Angeles 21, Calif. New York Sales Office: 55 West 42nd Street

or floors. For all resilient floors, terrazzo and painted surfaces. Available in plain or pine odor, in drums, half-drums, quarter-drums and 5 gallon containers. Approved by the Rubber Manufacturers' Association for rubber floors. Write for sample.

Fuld Brothers

Liquid Soaps, Floor Seals, Floor Treatments, Deodorant Blocks, Liquid Deodorants, Plumbing Specialties, Special Cleaners, Self-Polishing Waxes, Powdered Waxes, Oil Soaps, Liquid Cleaners, Disinfectants, Insecticides, Metal Polishes. Furniture Polishes, Deodorant Block Holders. Soap Dispensers.



A new and improved process of manufacture assures that every ounce of Monsanto's Trisodium Phosphate is 100% effective. Its pedigreed purity means full value for your money.

Monsanto, America's largest producer of elemental phosphorus, carefully and completely controls every step in production, from raw materials to the Trisodium Phosphate that serves your industry.

Production starts with mining phosphate matrix. Then, modern electric furnaces extract elemental phosphorus, of better than 99.9 per cent purity, from which Monsanto Trisodium Phosphate is made.

The near-absolute purity of the elemental phosphorus is passed along to Monsanto Trisodium Phosphate . . . giving pedigreed purity . . . full effectiveness . . . full value to users.

Monsanto Trisodium Phosphate is widely used as a detergent, as a water softener, in the laundry and for general household and industrial cleaning. For a sample for your experimentation, please use the convenient coupon, contact the nearest Monsanto office or write: Monsanto Chemical Company, Phosphate Division, 1700 South Second Street, St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Cincinnati, Los Angele Seattle, Montreal, Toronto.



Dept. PH-23, Phosphat	
	ut cost or obligation, a sample of
Name	
Company	
Street	
al.	9 0

SOME MONSANTO PRODUCTS DERIVED FROM PHOSPHORUS Phosphoric Acid (Anhydrous and Duohydrate) Trisodium Phosphate Tetra Sadium Pyrophosph

## SANITARY CHEMI

JULY 1945

**SANITARY** Products Section, which forms a part of every issue of SOAP, begins on page 79.



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chape of a cake of soap. But if a vote were taken, the soap's perfume would be elected by a large plurality. Specialists in our Research Department have been signally successful in originating combinations that lift soap-perfuming from ordinary to extraordinary. Many examples of their inventiveness are here—to interest

VAN AMERINGEN-HAEBLER INC. 315 FOURTH AVE., NEW YORK 10, N. Y.

you.

#### "SILENT SALESMEN?"

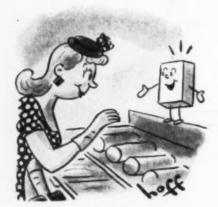
#### NOT THESE! COATED LITHWITE MAKES 'EM TALK!



"LOOK HERE, LADY!"



"HEY MISTER .... LOOKY"



"SEE, LADY, I'M JUST WHAT YOU NEED"



"PST-T ... LOOK HERE"

This revolutionary paperboard gives packages a crispness and freshness that makes them speak out on the shelf

As rising business costs swing more and more retailers over to the self-service idea, it isn't enough for packages to be "silent salesmen." Packages will have to talk. They'll have to out-talk their competitors. Talk their way off the shelf to the cash register.

And they can. Coated Lithwite folding cartons have already proved what they can do in mass displays. Coated Lithwite packages have a stand-out brightness and crispness because this revolutionary coated board takes ink better, reproduces colors more sharply and brilliantly. What's more, they have a quality look and feel that tips the scale in that split-second of indecision in a woman's mind.

Keep Coated Lithwite in mind, as you get into your postwar packaging plans. Clip the memo, keep it for the day when Gardner-Richardson can again accept new orders for folding cartons that "talk," made of this revolutionary paperboard.

#### The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

MIDDLETOWN, ONIO

#### CLIP THIS!

File this Coated Lithwite memo for reference when this quality paperboard is again available.

- 1. Mede by a revolutionary process. Coated Lithwite is the brighter, whiter paperboard that is formed, made and coated in one high-speed operation. Proved and improved for six years.
- 2. Means more eye-appealing carriers. Coated Lithwite's smooth, velvety, chalk-free surface forms a better base for printing inks and plates—reproduces even the smallest type cleanly, crisply. Brings colors up brilliantly—gives halftones a sharp realism.
- 3. Fower lammers and leakers. Coated Lithwite scores accurately without flaking or shattering. Takes a positive, tight seal.

Sales Representatives in Principal Chies: PHILADELPHIA . CLEVELAND . CHICAGO . ST. LOUIS . NEW YORK . BOSTON . PITTSBURGH . DETROIT



\* Workers like the easy way it lifts out deep pore dirt.

Women adore the lotion-like caress of its rich lanolin content.

\* Company doctors endorse its healing effect on nicks and bruises.

Management raves about its lightning cleansing action . . . which empties washrooms faster.

A Hysan Quality product for the Quality Jobber

SANITARY CHEMICALS

SELLING EXCLUSIVELY TO JOBBERS AND DISTRIBUTORS

Hysan Products Company
932 W. 38th Place
Chicago 9, III.



#### Perfect for Perfuming

LAUNDRY SOAPS - WASHING POWDERS - LIQUID CLEANSERS - POLISHES, etc.

Even when Oil of Citronella was low in price and easy to obtain, JAVONELLA was a reliable favorite. A great many manufacturers preferred its finer, cleaner odor, its uniform quality and consistent economy. And now that Citronella is so high in price and difficult to get, JAVONELLA is more important to you than ever before.

Write for Samples & Quotations

FELTON CHEMICAL COMPANY, ...

BRANCHES IN BOSTON . PHILADELPHIA . CHICAGO . ST. LOUIS . DALLAS

MANUFACTURERS OF AROMATIC CHEMICALS, ESSENTIAL OILS, PERFUMES AND BLAVORS



#### Just when the need is greatest

### WESTVACO announces INCREASED PRODUCTION of CAUSTIC POTASH

Not only additional production but also traditional Westvaco-quality Caustic Potash, consistently low in iron, chlorides and carbonates.

Our strategic plant location at South Charleston,
West Virginia—almost at the geographical
center of the chemical, textile and petroleum
industries means nearby, prompt service for
Midwestern, Southwestern and Southern
users of Westvaco Caustic Potash.

Write, wire or phone for samples, prices and delivery quotations.



WESTVACO CHLORINE PRODUCTS CORPORATION
405 LEXINGTON AVENUE - NEW YORK 17, N. Y.
CHICAGO, ILL. GREENVILLE, S. C. NEWARK, CALIF.



#### NEW AROMATICS SCENE ...

### with Insight by Givaudan

The effective development and production of new materials for use in perfumes, cosmetics and soaps under wartime conditions gives promise of an expanded resourcefulness at Givaudan, for the perfumer to draw upon in developing new product creations. In addition, our staff of chemists and technicians has added greatly to its experience in utilizing more familiar materials to obtain unusual results in various preparations. In the competitive years to come you will find Givaudan's service of increasing value in helping you endow your products with odors that build reputations and sales.

"BUY WISELY ... BUY GIVAUDAN"

Givandan-Delawanna INC.

330 WEST 42nd STREET . NEW YORK 18, N. Y.



### The Pace of Victory Permits Only A Congratulatory Handshake!

American Industry well merits a decoration for its brilliant record in the Mighty 7th! But, as our newly decorated Pacific heroes quickly return to combat, so industrial leaders aren't resting on their laurels. **Back into Bond action**—they are now busy consolidating recent Payroll Savings Plan gains!

First, many executives are now patriotically working to retain the substantial number of new names recently enrolled during the 7th War Loan. By selective resolicitation, they are urging all new subscribers to maintain Bond buying allotments.

**Second**, many are also employing selective resolicitation to urge every worker who increased his or her subscription in the 7th to continue on this wise, saving-more-for-the-future basis.

Help to curb inflationary pressures and harvest peacetime prosperity by holding the number of Payroll Savings Plan subscribers—and amounts of individual subscriptions—to the mark set in the Mighty 7th!

The Treasury Department acknowledges with appreciation the publication of this message by

#### SOAP AND SANITARY CHEMICALS



#### AT THE TIPS OF YOUR FINGERS

Literally, D&O are as near to you as your phone or your mail chute! We stand ready with the intensive experience of a century and a half to assist you in solving your perfuming problems.

The Aromatics and Essential Oils of highest quality, produced in our competent laboratories, have earned the continuous confidence of countless customers in the Industry.

"Noblesse oblige"... and we've never failed a customer yet!



Dodge & Olcott, Inc.

ISO VARICK STREET, NEW YORK 14, N. Y.

BOSTON . PHILADELPHIA . CHICAGO . ST. LOUIS . LOS ANGELES

Plant and Laboratories: Bayonne, N. J.

GIVE YOUR
PRODUCT ROOM
TO GROW

THE Institutional Market
SPENDS

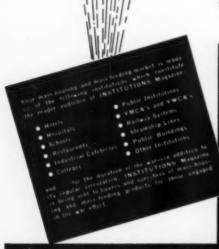
\$45,000,000

ANNUALLY

for WAXES, DISINFECTANTS, SOAPS, FLOOR FINISHES, CLEANING COMPOUNDS, INSECTICIDES, SANITARY CHEMICALS

the only publication through which you can reach all related divisions of the Institutional field. If your present or contemplated products have an application to this field, your advertising messages in the columns of INSTITUTIONS Magazine will gain for them the kind of acceptance they must have to share in the huge institutional Market.

The mass-housing, mass-feeding institutions of America are a mass market for waxes, disinfectants, soaps, floor finishes, cleaning compounds, insecticides and sanitary chemicals. The Institutional field is a concentrated market with each unit buying and consuming in volume . . . with all units spending over \$45,000,000 annually for these items alone. If your product has application to this field with its concentrated buying power, investigate the opportunities it offers for volume sales . . . Ask for a free copy of "Your Institutional Market." Write to INSTITUTIONS Magazine, 1900 Prairie Avenue, Chicago 16, Illinois.



CONSULT



#### Hooker Toluene Derivatives give you a Choice of Highly Reactive Intermediates

OOKER Electrochemical Company has done a vast amount of research with toluene and chlortoluene compounds. This has resulted in the development of many derivatives which together with the chlortoluenes, are being widely used as intermediates in many types of reactions. In these toluene derivatives Hooker has made available a number of chemicals which provide chemists with the benzyl group, C6H5CH2-; benzal group CoHoCH= and benzoyl group CoHoCO-

Listed below are some of these toluene derivatives. These Hooker chemicals are of the same high standards of purity and uniformity as are all Hooker chemicals. Bulletin 320, available when requested on your letterhead, gives additional information on these toluene compounds and derivatives and their behavior in typical reactions. Hooker Technical Staff is also prepared to help you in the use of these chemicals for your particular purposes.

PRODUCT

DESCRIPTION

Chemical Formula Molecular Weight Benzal Chloride C<sub>6</sub>H<sub>5</sub>CHCl<sub>2</sub>; 161

Benzoate of Soda CaHaCOONa; 144





White crystalline

Benzoic Acid CaHaCOOH; 122.1



White crystalline

Benzoyl Chloride C<sub>6</sub>H<sub>5</sub>COCl; 140.5



Water clear



CHEMICALS

8321

#### CHEMICAL OF THE MONTH CHLORPROPANE LIQUID 170

C3H1.5 Cl6.5 (Average)

To chemists working in plastics, rubber, paints, and sanitary chemicals fields, Hooker Research Laboratories suggest that an investigation of this new Hooker Chemical may prove advantageous. Chlorpropane Liquid 170 is a clear, colorless liquid with a characteristic odor, is insoluble in water and soluble in alcohol, ether and most chlorinated solvents. It becomes quite viscous at temperatures below -50°C. It is resistant to oleum, mixed acids, fuming nitric acid and hydrogen fluoride.

Among resins found to be compatible with Chlorpropane Liquid 170 are: acrylic resins, chlorinated rubber, vinyl polymers, polyterpene resins, poly-vinyl chloride and natural rubber.

Technical Data Sheet No. 333 describes the physical properties of Chlorpropane Wax. Research samples will be supplied when requested on your business letterhead.

Benzyl Alcohol, Tech C<sub>6</sub>H<sub>5</sub>CH<sub>2</sub>OH; 108.1

Colorless to light vellow liquid

Benzyl Chloride C<sub>6</sub>H<sub>5</sub>CH<sub>2</sub>Cl; 126.5



Clear, colorless to light yellow

Metanitrobenzovl Chloride CoH4NO2COCI; 185.5



Yellow to brown liquid partially crystallized.

Paranitrobenzoyl C<sub>6</sub>H<sub>4</sub>NO<sub>2</sub>COCl; 185.5

Yellow crystal-

Anhydride

Benzyl Thiocyanate Benzotrichloride

Monochlor-

#### HOOKER ELECTROCHEMICAL COMPANY

Buffalo Ave. and Union St., Niagara Falls, N. Y.

NEW YORK, N. Y.

TACOMA, WASIL

WILMINGTON, CALIF.

Caustic Soda Muriatic Acid

NO.

Sodium Sulfide Paradichlorbenzene Chlorine Sodium Sulfhydrate

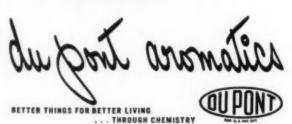
# depend on du pont NOLET EXTRA

Whether you want to lift a floral effect or point up spice bouquets... whether you want an ideal blender or a dominant floral fragrance in its own right, you'll want Alpine Violet Extra.

Powerful yet sweet, Alpine Violet Extra far surpasses the best Hydroxycitronellal. It is stable, highly resistant to alkali, non-irritating. And Alpine Violet Extra\* is a true synthetic—a product of Du Pont research.

Discover Alpine Violet Extra—it may answer your current need. And bring us your problems on any perfume. For whatever the product, whatever the fragrance, you'll want to see Du Pont early. You can always depend on Du Pont.

\*Para-isopropyl alpha-methyl dihydro cinnamic aldehyde



E. I. DU PONT DE NEMOURS & CO. (INC.)
ORGANIC CHEMICALS DEPARTMENT, AROMATICS SECTION, WILMINGTON 98, DEL.
Branch Offices: Boston, Charlotte, Chicago, New York, Philadelphia, Providence, San Francisco



#### 'We're Buying More Than Silicate of Soda; We're Buying Confidence"

That's the way PQ customers sum up their contracts with us. It's a confidence in our recognized ability to manufacture quality products as well as to deliver them, despite storms, floods, shortages, embargos. To us at Silicate Headquarters each contract becomes a double trust, which is carefully guarded through rigid controls and by all of those other acts, big and little, that are termed "extraordinary service".

Often we have been perplexed to know how production was going to keep pace with our customers' accelerated demands. Sometimes deliveries have been delayed due to the fact that to fill the order at all, it had to be transferred to another of our nine plants. Just one of the instances of "delivering beyond the letter of the agreement". . . something that you seldom see but which is implied by our signature on a contract.

#### PHILADELPHIA QUARTZ COMPANY

Dept. B, 129 South Third Street, Phila. 6, Pa. Chicago Sales Office: 205 West Wacker Drive

PQ SILICATES OF SODA

WORKS: Anderson, Ind. . Baltimore, Md. . Chester, Pa. . Gardonville, M.Y. . Juffersonville, Ind. . Kansas City, Kans. . Rahway, M. J. . St. Louis, Ma. . Utica, IB.

### Include the Dairy Industries in Your Selling Plans

- \* Insecticides
- \* Germicides
- \* Cleaners
- \* Detergents

The Dairy Industries are one of the nation's largest users of insecticides, germicides, cleaners, and detergents.

Here is a tremendous national market where clean sterile equipment is as important as fresh pure milk and where cleaning is virtually a continuous process.

You can reach and sell this market effectively and at low cost through

the Dairy Industries Unit — the three leading publications in the dairy industries — The Ice Cream REVIEW, The Milk Dealer, and National Butter and Cheese Journal.

Write for details and sales data about building lasting and profitable repeat volume for your products among the thousands of ice cream plants, milk dealers, creameries, condenseries, and cheese factories of America.

#### THE OLSEN PUBLISHING COMPANY

505 W. Cherry St.

Milwaukee 12, Wis.

Milwaukee













# SHELL REGULAR BASE

Refined to meet the needs of modern household insecticide manufacturers



50 WEST 50TH STREET
NEW YORK 20, N. Y.

MADE WITH



PURE SALES MAGIC



WHAT SINGLE INGREDIENT has magical consumer appeal? You'll find the answer waiting for you in the corner drug stores of America. Preference for products enriched with LANOLIN is overwhelming!

In the words of a neighborhood druggist, "We recommend as more beneficial the toiletry that contains lanolin. Customers accept it more readily, and some even ask for a product that contains lanolin."

The cue for post-war profits is clear! Start experimenting with Malmstrom's Nimco Brand Lanolin today. Yours for the asking are testing samples—and the know-how that has made Malmstrom "America's Largest Supplier of Lanolin."

N. I. MALMSTROM & CO.

America's Largest LANOLIN • Anhydrous U.S.P. • Hydrous U.S.P. • Absorption Base • Technical DEGRAS • Neutral and Common • Wool Greases

147 LOMBARDY STREET . BROOKLYN, NEW YORK



This new low-priced aromatic combines odor freshness with effective strength. As little as 1% gives a very definite, pleasing and refreshing odor to soap chips, soap powders, mechanic's hand soaps, cleansers and other soap products.

Citrella, at the present time, is available in large quantities. We'll be glad to send you samples for your own experiments. Write us today!

Aromatic Products. Inc.

15 East 30th Street, New York 16, New York

. CHICAGO . DALLAS . . PITTSBURGH

MECHANICS HAND SOAP



 The Dry Ice Plant of Wyandotte Chemicals Corporation at Wyandotte, Michigan, is the world's largest. Each of its huge ice presses exerts a pressure of one million pounds. This, applied to carbon dioxide "snow," produces a 240-lb. cake of dry ice—140° colder than ordinary ice. Some of these cakes are seen ready to leave the presses.

#### **YANDOTTE CHEMICALS CORPORATION**

ONE OF THE WORLD'S GREAT PRODUCERS OF CHEMICALS

> SODA ASH CAUSTIC SODA **BICARBONATE OF SODA** CALCIUM CARBONATE

CALCIUM CHLORIDE CHLORINE **HYDROGEN** SODIUM ZINCATES

AROMATIC INTERMEDIATES DRY ICE Other Organic and Inorganic Chemicals

WYANDOTTE CHEMICALS CORPORATION MICHIGAN ALKALI DIVISION

WYANDOTTE, MICHIGAN



VITAL TO VICTORY TODAY-READY TO WORK FOR A GREATER TOMORROW



### Give us a floor...a dirty floor!" implore the flooradora boys

"Then kindly stand back and observe the cleaning technique of a 4-man floor-nado! Scrubby, Moppy, Rinsey, and Waxey, to be explicit. And with Davies-Young on the job, we modestly admit that our results (which are strictly A-1 with time and effort hardly worth mentioning) are likewise amazing even to us! So if you are the owner of a floor . . . a dirty floor, just send for us Flooradora Gents . . . and supplies, of course, by Davies-Young!

Buckeye Liquid Scrubbing Soap is for use on all surfaces that require a neutral soap to clean. Sani-Scrub was developed particularly for cleaning rubber, rubber tile, asphalt tile, composition, mastic and cement. Florex is a balanced detergent, lower in soap content than Sani-Scrub. No. 30 is a neutral concentrate 30% to 32% anhydrous. Beamax is most effective in developing a protective lustrous film on all types of floor surfaces, after the floors have been prepared by the right type of Liquid Scrubbing Soap.

BUCKEYE

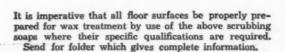
SANI-SCRUB

FLOREX

NO. 30

BEAMAX

THE DAVIES-YOUNG SOAP CO.
DAYTON, OHIO





#### Penetration is Vital in Selling the Hospital Field

SUPERINTENDENT

DIRECTRESS OF NURSES

DIETITIAN

HOUSEKEEPER

ENGINEER

MAINTENANCE

PURCHASING AGENT

PHARMACIST

BUSINESS OFFICE MANAGER

LAUNDRY HEAD

OPERATING ROOM SUPERVISOR

MATERNITY
SUPERVISOR

The circulation given your advertising message in the hospital market must have depth as well as breadth. So many factors enter into the purchase of the great variety of equipment, supplies and services bought by hospitals that it is essential to sell all of them.

HOSPITAL MANAGEMENT provides this "circulation in depth", since in 75% of the institutions where it is received copies are routed from one department head to another in a manner similar to that illustrated at the left. This is the routing of the two copies which go to Jamaica Hospital, Jamaica, New York, as described to us by superintendent Francis C. Leupold.

After being circulated to these important members of the hospital's staff, the two copies are filed for permanent keeping, one in the office of the superintendent and the other in the office of the directress of nurses.

Thus the technicians whose advice must be sought when purchases are contemplated, have been conditioned beforehand. They are familiar with the advantages you have to offer and since they are the ones who will use the equipment or services you sell, their opinions carry much weight. Hospitals are such complex institutions that the administrative head who is empowered to sign the order must seek the advice of his specialists.

Month after month articles of great value to individual department heads of hospitals assure their continuing interest in material which contributes to the overall benefit of the hospital and the patients it serves. This partially explains our 213% gain in advertising and 31% gain in circulation recorded in the last four years. Let us give you the complete details of our really remarkable story.



For Detailed Reference Date See THE MARKET DATA BOOK Business Publications Edition

Management

The Only Hospital Public Control

The Only Hospital Public Con

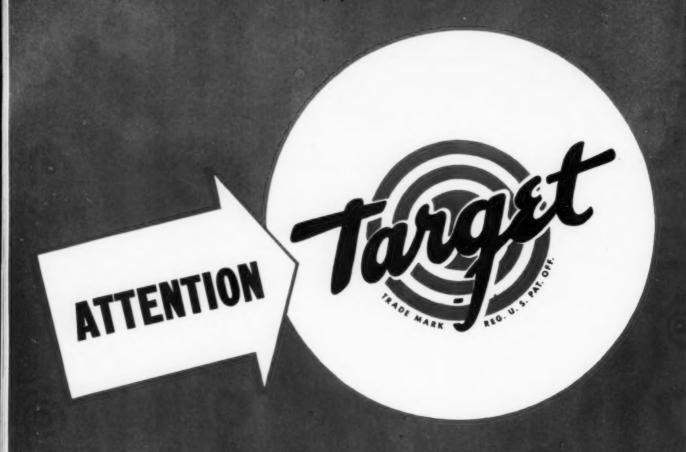
The Only Hospital Publication which is a member of both the ABC and ABP.

100 E. OHIO STREET, CHICAGO 11

### Winter-phene

America's most discreetly scented germicide—designed for the buyer who wants to use disinfectant, but doesn't want every body to know he's using it. . . by

Baird & McGuire, Inc. St. Louis, Mo. Holbrook, Mass.



#### Offering for Immediate Delivery

Cases (24/1 lb. cans) TARGET DRAIN PIPE SOLVENT

Cases (24/22 oz. cans) TARGET GRANULAR BOWL CLEANER

Order Promptly

Supply of cans limited.

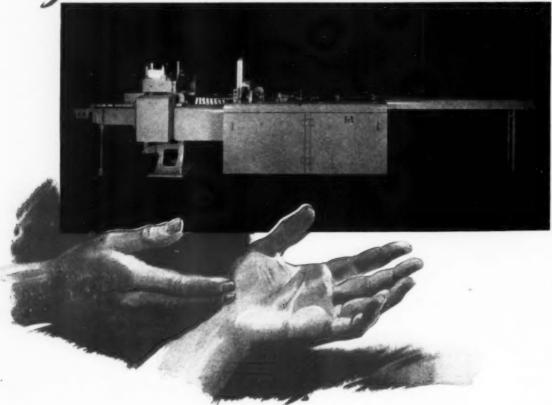






BALLAS 1 - DETROIT 2 - MEMPHIS 1 - MINNEAPOLIS 2 - NEW ORLEANS 13 - ST. LOUIS 2 - SAN FRANCISCO 3 - SEATTLE 4
Flarasvith Labs. (Casada) Ltd. — Montreal - Torosto - Vancouver - Winnipag Flarasvith Labraturios de Montrea

### Green Hands Constant-Motion Cartoner Does Its Job Notwithstanding



Operation by unskilled hands is a hard test for any machine. But it's a test that the Jones Constant-Motion Cartoner always passes. For our designers are always seeking the simple, the positive, the foolproof machine.

We aim for: (1) The fewest moving parts needed to perform complex operations. (2) Smooth, trouble-free operation, with automatic protection against faulty cartons or loads. (3) The least possible handling of materials.

And Jones cartoners are not designed on

the drawing board alone. New ideas—vital improvements—are conclusively tested with complete working models. There's never any guesswork as to how a Jones Constant-Motion Cartoner will perform.

That is why a Jones cartoner is so fast—so longlived—so dependable, even with "green hands" at the controls. That is why you get highest production at lowest unit cost.

Remember, 100, every large soap manufacturer uses
Jones Toggle Operated Soap Presses—for
better finished soap at lower operating costs.

#### R. A. JONES AND COMPANY, INC.

P. O. Box 485

CINCINNATI, OHIO

#### AS THE SEES IT

WITHIN the past year, the number of brands of soap products, cleansers, laundry bleach, and allied products on the American market has declined something over thirty per cent. In other words, about one-third fewer brands of these items are being stocked by retailers today compared to a year ago. This rather startling fact was brought out recently in its annual survey of the Greater Milwaukee market by the "Milwaukee Journal." And because Milwaukee is quite fairly representative of American urban markets, the same general situation probably exists elsewhere.

Although many new brands of almost every type of product have come to market during the past year or two, mostly to circumvent too-low ceiling prices, a considerably larger number of old brands have been withdrawn from the market by manufacturers for one reason or another. In the majority of cases, inability to produce and sell at OPA ceilings without loss has been responsible. Unprofitable brands, - that is brands where the manufacturer was caught by a low ceiling price, - have been withdrawn from the market so that raw materials might be used to expand the output of more profitable brands. Particularly in the case of soap products, fat quotas have been concentrated in the more profitable items by manufacturers. Where certain brands represent a large investment over the years in advertising and merchandising expense, the manufacturer has naturally undertaken to preserve his equity in these brands at the expense of his lesserknown brands. Where the latter happened to be low-price competitive items, as was frequently the case, their temporary withdrawal from the market has been common procedure.

Irrespective of individual reasons, the over-all effect of war-time regulations has been to reduce the number of brands of all products. Whether too-low ceiling prices, fat quota restrictions, general raw material shortages, or other cause, the result has been to eliminate those products with higher costs, more often the output of smaller units, and to tend to concentrate the market in the hands of fewer manufacturers. Such a trend can be nothing but economically unsound, even though it is probably an unavoidable by-product of a war economy. A more realistic re-pricing policy by OPA in the case of those caught by extremely low ceiling prices might have aided to a degree in reducing the trend.



DIFFICULTIES in obtaining sufficient supplies of fats and oils appear to become greater with each passing month. Soapers find available tallow and grease lessening, although supplies of white grease in the East have been fairly plentiful until recently. Quantities of coconut oil assigned to soapers remain extremely small. In other vegetable oils and in most of the fatty acids, stocks for soap use become less plentiful as time goes on. All told, the fat and oil situation, irrespective of quotas, appears to be closing in on the average soaper.

There are those who continue hopeful that copra will be forthcoming from the Philippines in good tonnage a few months hence. This is in spite of the blunt predictions for little or no Philippine copra or coconut oil until the military situation is more completely consolidated than it is today, which might mean not until 1946. But those who hope maintain that copra will

be and is already being produced in the Philippines, that accumulated stocks will in the near future present a strong pressure to find a market, and that ships returning to the United States will soon carry copra instead of ballast, — most of which has been labeled wishful thinking.

Although we have for years watched scarcities turn into plenty under the warming sun of good prices and a ready demand, — and have seen oil and fat production estimates topped by rather large tonnages, — we still cannot see how there is too much to cheer about in the oil and fat outlook for the balance of 1946. Those soapers who envisage a sudden improvement in the meat situation and who also feel that somehow, somewhere, a rabbit will be pulled out of the hat, should not lean too heavily on their hopes. The basic oil and fat situation does not appear any better than it did several months ago.



TITH the war in Europe over, and an increasing number of G.I.s getting their discharge buttons, a fair number of former employees of the soap and sanitary chemical field are finding their way back into the industry. While they are being welcomed enthusiastically, there is no dodging the fact that there will be plenty of tough problems to solve in fitting them back smoothly into their logical place in the general scheme of things. A typical problem is the former shipping clerk, more recently an Air Force captain, who has completely outgrown his former job, and has become accustomed to an entirely new standard of pay and degree of authority. Preparations will have to be made in such cases to work out new jobs fitting the new individuals, if the industry is fairly to discharge its responsibility toward returning service men.

Another common problem, we predict, will be the necessity of explaining to the returning service man that the inflated salaries he has heard about in war plants do not apply in normal peace-time pursuits. It will be a sad task to puncture the rosy dreams that have blossomed in thousands of fox holes, but hard reality would seem to indicate that we must all shortly be back closer to our pre-war standards.

A number of firms in the sanitary supply field have told us that they are keeping in close touch with the separation centers from which returning service men are being fed back into industry, and that they have found this a useful way of augmenting their insufficient labor supply. If there is such a center near you, make sure that they have all the necessary information about openings in your organization, skills required, opportunity for advancement, prospects of the industry, etc. Getting employees today is basically a sales job, and the firm that makes the most intelligent and aggressive approach to the problem has the best chance of getting the cream of the returning soldier crop.



THAT the general container situation is likely to ease off steadily into a pre-war normal as the months of 1945 roll on may be a dream of some manufacturers, but WPB flatly predicts otherwise. The container situation is bad and the outlook is no better, says WPB in a recent release on the subject. And by containers, WPB means all types except perhaps collapsible tubes, - cans, bottles, drums, cartons and corrugated and fibre shipping cases. In all likelihood, WPB has seen the hopes of manufacturers rising since V-E day and in order to explain in advance a continuation of its restrictive regulations, tells industry what to expect over the balance of the year. Well, manufacturers can still hope, - and when any change comes, it must be for the better. All in all, conditions cannot be much worse than they are.

#### Trends In

#### **TOILET SOAP PERFUMING**

By Dr. E. G. Thomssen

ONSIDERABLE attention has been concentrated over the past year or two upon the shortage of fats and oils needed in soap manufacture. Much less importance has been given to the raw materials for soap perfuming. It need hardly be noted that the shortage of essential oils and aromatic synthetics, has posed serious problems for soap perfumers,-quite as serious, perhaps, as those created by the shortage of soap making fats and oils. Just as soapers have done excellent work in preserving the supply of and extending the search for additional sources of fats and oils through the use of new types and salvage of waste fats, however, so have the purveyors of essential oils and aromatic chemicals made possible the acceptable perfuming of soap even under difficult wartime conditions.

It is of interest to trace briefly the trends in toilet soap perfuming, particularly for the last 30 years. This will give a better picture of what has occurred recently and is now taking place in this field.

Prior to World War I, perfumes for toilet soaps consisted almost entirely of natural products, especially essential oils. Oils like geranium, bergamot, lavender, sandalwood, patchouly, vetivert, petitgrain, sassafras, citronella Java and similar oils comprised by far the greatest portion of soap perfumes. When synthetics were used they were added mainly as fixatives, as extenders and to give lift and punch to the soap odors. Of the synthetics, musk xylol was the aromatic chemical appearing most frequently in soap perfume for-

mulae. Soap perfumers were of the opinion that these natural oils were an absolute necessity for an effective and lasting soap perfume—plus some of the natural resins, and a slight amount of certain synthetics and musk.

When World War I broke out, the use of natural products received impetus, rather than curtailment. That war did not greatly affect the production of natural products except for the loss of man power and the lack of shipping space due to sinkings by U boats. It was the production of synthetic aromatics that was seriously affected. Not only were these made from critical war raw materials but the areas in which this war was fought were important in their production.

During the period between the two World Wars it is well known that the chemical industry in the United States made tremendous progress. The development of the manufacture of synthetic aromatics was included in this upsurge. It had been determined that never again would we be dependent upon Germany and other foreign suppliers for essential chemicals. During this period of expansion the production of these chemicals increased to the extent that, while in 1914 we imported the great majority of the synthetics, by 1941 the amount imported was negligible. This was indeed fortunate, for while in World War I the supply of organic chemicals was greatly curtailed, World War II saw the reverse of this become true. Synthetic aromatic chemicals were in fairly satisfactory supply while essential oils and natural aromatics were shut out. As the war extended to France, Italy, Africa,

India, Australia, the East Indies, China, Japan and threatened other producing centers, the supply of natural products dwindled to a mere trickle. When it was attempted to supply some lemongrass oil, citronella and other oils from the Everglades in Florida and certain parts of Central America, it was found that certain obstacles, like improper climate, high labor costs and inferior quality, were encountered. Products that did not warrant the high prices demanded for them, did not meet with much enthusiasm. While it was possible for the U.S. to supply synthetic aromatic chemicals in large volume, their production also met with considerable difficulties due to the raw material situation. Just as an example, toluene and benzene, two essential raw materials for the production of war materiel, are of extreme importance to the making of aromatics. It was hardly possible then, in the emergency, to please the nose rather than to defend the safety of the country. The increased demand for synthetics led to a shortage and supplies were by no means sufficient to meet the demand. It became necessary therefore to resort to every possible means to stretch the essential oils and synthetics which were available and to seek new methods of using up odor-giving products which had not received great attention during normal times. It was also necessary to draw on available essential oils in greater quantities than usual.

It is enlightening at this point to review some of the trends in perfume raw materials covering the period 1938-1944. During these years about 50 manufacturers were making aro-

matic chemicals in the United States. Of these only 25 produced in substantial quantities and the great majority of the producers were important in but a limited number of these products. Only one company produced practically a complete list of the major organic chemicals used for aromatic and flavoring purposes. These comprise approximately 350 isolates, synthetic aromatic chemicals, flavoring materials and allied pharmaceuticals. Not all of these, of course, find their way into soap perfumes, in the form in which they are synthesized, but few aromatics can be named that are not used by the soapmaker in one form or another.

A N insight into the trends of quantities of aromatics produced, sales volume and unit price per pound is obtained from Tables I, II, and III. These tables indicate that the production of perfume materials more than tripled in six years while prices decreased slightly, but steadily, during the more recent years. It is doubtful whether this decrease can be maintained in the post war era.

Further light on trends in the aromatic chemical field may be gained from Table IV which gives sales figures and the average selling prices per pound for nine of the leading aromatic chemicals. Three of these are essential oil isolates, five coal tar derivatives and one is derived from both sources. The average selling price of these nine products in 1941 was \$1.03½ per pound.

In Table V are presented the imports of aromatic chemicals from 1938-1941. It is to be noted that while the prices of these imported items are considerably higher than those made domestically, these cannot be compared with prices in Table IV since they do not represent the same chemicals. It is of further interest to know that in 1938 only six synthetic aromatic chemicals were imported into the United States in quantities over 1,000 lbs., in 1939 but nine were imported in a total of over 1,000 lbs. and in 1940 only eleven in a total of 500 lbs. or more. Of these imports the majority of items found use

TABLE I
Production and Sales of Perfume and Flavoring Materials
from 1938 to Date

Year Produced	Pounds Sold	Selling Value	Unit Sales Value per lb.
1938 . 5,310,285	4,962,000	\$ 4,160,000	\$ .84
1939 . 7,486,000	7,171,000	6,035,000	.84
1940 . 7,994,638	7,191,000	6,676,000	.93
1941 14,199,000	12,615,000	13,090,000	1.04
1942 . 17,778,000	16,351,000	18,233,000	1.12
1943 . 17,530,827	21,864,364	16,683,519	.76

The above figures include all synthetic organic chemicals produced from coal tar and petroleum sources, and also include the organic chemicals which are derivatives of the essential oils (such as rhodinol, vetivert acetate, hydroxycitronellal), but do not include the essential oils themselves, nor blended perfume bases (known as "compounds" in the industry).

TABLE II

Production and Sales of Perfume and Flavoring Materials of Coal-Tar Origin from 1938 to Date

Year Produced	Pounds Sold	Selling Value	Unit Sales Value per lb.
1938 3,836,632	3,663,890	\$3,368,050	\$ .92
1939 5,349,000	4,938,000	4,447,000	.90
1940 5,485,000	5,062,000	4,751,000	.94
1941 9,931,000	8,893,000	7,804,000	.88
1942 7.947,000	7,247,000	9,846,000	1.36
1943 8,120,000	7,973,000	9,799,000	1,23

TABLE III

#### Production and Sales of Perfume and Flavoring Materials of Non-Tar Origin, from 1938 to Date

Year	Pounds	Pounds	Selling	Unit Sales
	Produced	Sold	Value	Value per lb
1938 .	1,473,653	1,298,373	\$ 791,863	8 .61
1939 .	2,137,000	2,233,000	1,588,000	.71
1940 .	2,510,000	2,129,000	1,925,000	.90
1941 .	4,268,000	3,722,000	5,286,000	1. <b>42</b>
1942 .	9,830,601	9,103,885	8,387,396*	.92*
1943 .	9,410,522	13,891,486	6,891,881	.50*

<sup>\*</sup>This is an official government figure. However, it is difficult to see how the unit value of chemicals derived from essential oils could have declined in 1942, when the prices of the oils themselves were soaring.

#### TABLE IV

#### Sales of Nine Leading Aromatic Chemicals in 1941

A few chemicals included in these lists make up the bulk of the quantities. For instance, in 1941, we show 14.199,000 pounds of perfume and flavoring materials manufactured in the U. S. A. The following are a few of the most important items, showing the amounts produced in 1941, and the average selling price per pound:

Chemical	Pounds Produced	Unit Sales Value	Total Sales Value
Methyl Salicylate	2,577,601	\$ .30	\$ 773,280
Terpineol	962,213	.28	269,420
Vanillin	686,360	3.21	2,203,216
Citronellal	563,966	2.06	1.161,770
Geraniol		1.63	737.011
Benzyl Acetate	467.499	.52	243,099
Benzyl Alcohol	349.061	.60	209,437
Coumarin	301,156	2.36	710,728
Phenyl Ethyl Alcohol	292,884	1.96	574,053
	6,652,894		6,882,014

This makes a total production of these 9 chemicals (3 essential oil derivatives, 5 coal tar derivatives, and one derived from both sources), of 6,652,894 pounds selling at an average for \$1.031/2.

TABLE V

Imports of	Aromatic Chemicals	Into the U. S	A. from	1938 to 1941 Average Unit
Year		Quantity	Value	Value per pound

Year	P	roducts	Quantity	y	Value	Value per poun
1938		82	48,458	Lbs.	\$ 61,068	\$1.26
			69,921		105,492	1.51
1940		65	21,831		59,427	2.72
			22,051		56,861	2.58

\* January to September only. No figures are available after September, 1941.

in the perfuming of soaps, though the total poundage was small.

In referring again to Table I it is to be noticed that in the year 1943 about 41/4 million lbs. more of all perfume and flavoring materials were sold than were produced. It is quite well understood that since that time this trend has continued. Since soap perfumes represent a substantial portion of this figure we will examine more specifically some of the expedients that have been found necessary in the face of these growing shortages.

OSE type odors have long been R suitable and economical for toilet soaps. Rose geranium oils were popular for producing this type odor as long as they were available in ample quantity and reasonable in price. This has not been the case, however, in recent years. As a result rose geranium has been largely replaced by artificial geraniums, consisting to a large extent of geraniol. This isolate was quite plentiful in early war years as it was produced with citronellal from Java citronella. Synthetic menthol production required citronellal as a raw material in large quantities. The production of geraniol was thus greatly increased as a result and it was possible to offer this perfuming material quite cheaply. A ready market was found, as geraniol is an excellent soap perfume in the absence of supplies of oil of geranium. Other synthetics like diphenyloxide and phenyl ethyl alcohol have also found increasing use in rose type soap perfumes and cinnamic alcohol has been used increasingly as a fixative.

Oil of lavender, another favorite essential oil for soaps, has been scarce for several years. Here it became expedient to turn to spike lavender from Spain and to make an acceptable substitute by using spike in combination with synthetics like terpinyl acetate and linalyl acetate. Satisfactory syn-

thetic bergamots have been made from combinations that consist mainly of terpinyl acetate, linalyl acetate together with citral, lemon terpenes and some oil of lemongrass.

Patchouly is replaced with oil of cedarwood touched up with synthetics but oil of cedarwood also has become scarce. Ionones for violet odors were available in the early part of the war because oil of lemongrass from which citral is isolated and converted to ionones was at that time in fair supply. Heliotropine, an important synthetic for soaps has been scarce off and on during the war, and a satisfactory substitute has never been found. Lilac odors have been quite readily available, as terpineol, their main ingredient for soap odors, is produced from pine oil. Neroli characters have been aided by oil of petitgrain from South America. Orris, used in fine soap perfumes only, is completely off the market and has been replaced by ionones. Civet, also used to a slight extent for soap perfumes is replaced with indol and skatol.

Coumarin, a synthetic of value in soap perfumes is very scarce because it is made from ortho cresol, a critical war material and coumarin has also found increased use in the flavor field due to the shortage of vanillin. Amyl cinnamic aldehyde another favored aromatic, especially for white soaps, has been available in fair quantities. A series of important synthetics that have been available in fair quantities are the aliphatic or fatty aldehydes which have become valuable to produce satisfactory effects in toilet soap perfuming. Java citronella oil used largely for perfuming floating and laundry soaps has increased so greatly in price that soapers cannot afford to use it any longer.

In the face of such conditions, it is fortunate that the dealers in aromatic chemicals have not only met

the emergency by the means of substitution as just outlined, but also by finding means of increasingly using other odoriferous bodies at hand. In certain sections domestic vegetable products have been distilled to build supplies of essential oils already available. In normal times many by-products and still residues, obtained in producing isolates and synthetic aromatics, have been discarded in spite of their possessing odor value. During the present stringency it has been both necessary and profitable to purify and refine these by-products to produce much needed and satisfactory products from which soap perfumes, especially for cheaper grades of soap, could be formulated. These have been most valuable.

It will be interesting to surmise what the procedure for perfuming toilet soaps may be in the years after the war is over. Before its outbreak it was well understood that but one of the most widely selling white toilet soaps was scented with practically a 100 per cent synthetic odor. Most other soap odors still included natural products. It is quite probable, however, that the synthetics will hold their present advantage as these artificial oils, like patchouly, vetivert and others, have given satisfactory service in war times and are cheaper in price than the natural oils even in normal times. Essential oils will only replace synthetics when their cost is decidedly lower. Soapers and their perfumers will give synthetics more consideration because of their greater uniformity and purity. The impetus given to the use of aromatic synthetics during the World War II years is bound to last for years to come.

Preliminary storage tests indicate that the data obtained by the use of dried air in the active oxygen method, are more reliable as an indication of storage behavior than the data obtained by the use of moist air, as commonly used. A recognition of this effect of moisture is of great importance in the study of the effects of various antioxidant materials on the stability of fat. J. J. Nagy, B. W. Beadle, and H. R. Kraybill. Oil & Soap 22, 123-4 (1945).

#### Mettallic Soaps

by Milton A. Lesser

ITH a growing appreciation of their adaptability, the importance of metallic soaps has increased greatly during recent years. Indeed, for some industries, the heavy metal salts of fatty acids are now classed as essential raw materials required to give specific or novel quali-

ties to the manufactured products. Ordinarily, we consider as soaps only the alkaline salts of the fatty acids which are characterized by their solubility in water, their lathering properties, and, most important, their detergent action. The so-called metallic soaps, on the other hand, are insoluble in water and display properties and characteristics which differentiate them sharply from the much more familiar water-soluble alkaline soaps. Nonetheless, definite similarities do exist between the two types of soap. This is manifest, not only in the parallelism of certain of their applications, but more particularly in the fact that both kinds of soap are based upon reactions with fatty acids. In the case of metallic soaps, individual rather than mixed fatty acids are required. However, one should not overlook the trend toward the use of pure fatty acids in the manufacture of detergent soaps.

Metallic soaps are formed by a process known chemically as double decomposition. (1) The phenomenon is a familiar and annoying one in areas where hard waters predominate; the reaction between the dissolved salts and the soluble soaps resulting in the precipitation of calcium, magnesium, iron and other insoluble metallic soap. A nuisance under such circumstances, use of the same type of reaction under carefully controlled conditions results

in the formation of these and other metallic soaps of dependable uniformity and purity.

Commercially, various modifications of the precipitation process are quite feasible. In one quite standard method, an aqueous solution of an appropriate metallic salt is used to prepare precipitated metallic soap by causing the salt to react with a water-soluble, sodium soap of the desired fatty acid. Of course, the type of product obtained will depend in large measure on the soluble soap used. A low melting soap yields a soft plastic mass, while a high melting soap will cause the precipitation of fine particles. (2)

In other methods, aqueous alcoholic solutions are used as the reacting medium. One typical process is as follows: Molecular proportions of the fatty acid are weighed out, dissolved in ethyl alcohol, and carefully neutralized with alkali. Some water is then added and the solution is treated with a little more than the theoretic quantity of the heavy metal salt. The

soaps produced by this method are usually voluminous when filtered and then dry down to fluffy powders of relatively large bulk.(3)

Alcohols are used in other commercial procedures. Thus, in one patented process, (4) the metal is dissolved in butyl alcohol, an equivalent of the organic acid is added, and the alcohol is removed. Metallic soaps, like aluminum stearate, may be produced by such methods. Oleates, linoleates, palmitates and naphthenates may be similarly prepared.

Fusion methods also loom large as procedures for making metallic soaps. Fused soaps are prepared by fusing an oxide, hydroxide, carbonate or other salt into a fatty acid. According to Elliot, (2) the choice of method, whether precipitation or fusion, depends to a large extent upon the type of product desired. In some patented methods, the use of both procedures is specified. In one example describing production of antimony oleates, (5) such soaps may be obtained by causing oleic acid to react with antimony oxides. Al-

ternatively, double decomposition between salts of oleic acid and antimony salts may be effected in a substantially anhydrous medium. In the latter case, an alkali metal or amine salt of oleic acid and an antimony halide may be used, and decomposition performed in the presence of an anhydrous solvent such as ether, methyl alcohol, ethyl alcohol, glycerine or benzene.

ROM the standpoint of versatility and widespread use, it would appear that the metallic stearates are the most important compounds of this class. (7) With literally scores of metallic soaps available, most of the many applications of these compounds derive from a comparatively small group of soaps. These include the soaps of aluminum, calcium, zinc, lead, copper, and more recently, lithium.

Aluminum stearates probably rate the leading place among metallic soaps not only on the basis of actual consumption, but also because of their extensive use in grease and lubricant manufacture, paint formulation, waterproofing processes and many other applications. (8) Manufactured by several methods, (9,10) it is important to know that aluminum stearate is available in three forms. Being trivalent, aluminum combines in three different ways with stearic acid to form the mono-acid, di-acid and tri-acid stearates. Recognizing the different properties of these three substances is of great importance in selecting the proper stearate for a given application. From the standpoint of importance and commercial utilization, the di-acid stearate is the most outstanding of the three.(8) Of course, other soaps of aluminum have important technical uses. (11)

Calcium soaps have somewhat similar uses, more particularly in grease manufacture. Zinc stearate, the most useful of the zinc soaps, (12) is valuable, not only in grease and paint manufacture, but in rubber compounding and cosmetic powder formulation as well. Because of the well-known fungicidal properties of their metallic portions, copper soaps have become extremely important as rotproofing

agents for many types of equipment being shipped to the Pacific war areas. Lead soaps have proved valuable in the formulation of special greases, (13) as well as in various other products used by the paint and printing ink industries.

Methods for producing lithium and its salts at lower costs have focused considerable attention on this very light metal. Hence, it is understandable that while lithium stearate is not a new compound, it is only within the last few years that it has been given any great consideration. Studies of its potentialities have given lithium stearate new and important uses in the manufacture of lubricating greases. The rise of this metallic soap in treating paraffin waxes offers promise of valuable substitutes for hard-to-get natural waxes. (14,15)

Less widely used, but with specific properties (16,17) that make them of value in various industrial applications are the soaps of barium, (18,19) cerium, (20) chromium, cobalt, magnesium, (21) manganese, nickel, strontium, tin (22) and titanium. (20)

The metallic soaps have reached the stage where some form of classification is necessary. While these soaps could be discussed as individual compounds, there are now so many overlapping or parallel applications that such a classification hardly seems feasible. Elliot (2,23) has proposed that metallic soaps be classified according to the properties which determine the use of the soaps. These are given as follows: (a) the ability of the soap to dissolve in organic solvents and supply metal cations, (b) the ability to influence the characteristics of liquids in which it is dispersed, and, (c) the physical character of the soap.

Probably more indicative, however, is a classification according to the consuming industry.

ERTAINLY if the technical, and especially the recent patent literature is any index, the metallic soaps find some of their most important uses in the formulation of greases and other special lubricants. In a highly mechanized world, proper lubrication

is a most vital consideration. Through the use of various metallic soaps it has become possible to prepare the lubricants needed for modern intricate machinery, aircraft engines and the like. Moreover, through the use of these compounds lubricating engineers have been able to prepare products that function under wide ranges of temperature, under extreme pressure and other difficult conditions. (14,24)

While some metallic soaps, particularly stearates, display excellent lubricating qualities in their dry state, these compounds find their greatest use in the production of greases. According to Copley, (25) grease is essentially a soap into which a mineral oil has been beaten or agitated; the soap serving as a vehicle to carry the oil to the point of use. A wide variety of greases are possible with various soaps and oils and the same combinations may vield different results with materials from different sources or processed differently. He notes that service conditions dictating the use of greases instead of oils include: protection against dust and dirt, inaccessible bearings, elimination of leakage and waste, the necessity for tougher films, and the need for thicker films at low speed as well as the lubrication of open gears.

It is recognized that the most important greases are the soda soap greases, the lime soap greases and the aluminum soap greases. (24,25,26) The first is not a metallic soap base but rather a soluble sodium soap that vields greases with distinctive properties of their own. Calcium and aluminum soap dispersions in mineral oil yield products with a short unctuous texture owing to the small size of the fibers in these systems. (27) In this connection, it might be mentioned that lithium stearate dispersions may yet take their place along side the metallic soaps of calcium and aluminum in grease manufacture.

Lime base greases may be made not only with calcium stearate, but with a number of other calcium soaps as well. As a rule, lime soap greases have a smooth buttery structure; offering less resistance to flow and less fluid friction in bearings. Like most greases made with metallic soaps, they are water-repellent and tend to seal the bearings against moisture. However, they have a comparatively low resistance to temperature and lose body at temperatures above 165°F.(25) Although lime base greases have been known and used for decades, improvement in their formulation has resulted in the production of more stable products.(28,29,30) The usefulness of such greases has also been extended, (31,32) including lubricants with improved properties for Diesel engine use.(33)

Aluminum soap base greases have extreme tackiness, are unusually adhesive, difficult to displace and are water-resistant. These qualities make them useful for spring shackle lubrication, on high speed open gears, and similar applications. (25) Such greases have also found acceptance in lubricants for chassis bearings, (34) solid lubricants for valves (35) and in low temperature lubricants. (36) Aluminum stearate is frequently specified in patented methods. In an older procedure, (37) for example, lubricants were made by adding 5 to 20 per cent of aluminum stearate to a highly viscous mineral oil.

Newer processes similarly employ the stearate for making non-bleeding lubricants (38) and liquid greases suitable for penetrating bearings. (39) On occasion combinations of aluminum di-stearate and aluminum tristearate have been specified as the metal soap components of the lubricants. (40) In a quite recent instance, (41) a mixture of aluminum stearate and aluminum naphthenate is used in a lubricant especially suited for chassis parts of automobiles and crawler-type tractors. Aluminum greases have been studied quite extensively, (42) and improved methods for their manufacture have been developed, (43,44)

Lithium stearate and other lithium soaps are moving rapidly to the fore as components of lubricating greases, (45) a fact indicated in the growing number of patents (46,47) specifying their use. Valuable as thickening agents for making lubricants suitable for use under heat and pressure, lithium stearate has also proved

## Metallic Soaps find some of their most important uses in the formulation of greases and other special lubricants

effective in compounds for lubricating aircraft bearings under low temperature conditions. In discussing the versatility of lithium stearate, Meyer (15) remarks that the low water-solubility, together with the ability to form high melting gels, has made lithium stearate a useful material for grease manufacture.

It is common practice in grease formulation to employ mixed soap bases in order to obtain a more rounded product or to secure a lubricant particularly suited to a specific need. Lithium soaps have found such uses as is evident in several patents. For example, lubricants which are useful over a wide range of temperatures are formed from a mixture of mineral oil, a lithium soap and a calcium or sodium soap. (48) In a more recent example, (49) a turret lubricating grease is specified as containing 7 per cent of calcium stearate, 2 per cent of lithium stearate, 0.6 per cent of aluminum stearate and 1 per cent of lead oleate; the rest of the lubricant consisting of neutral mineral oil and naphthenic oil.

Quite a number of examples of the use of mixed soaps, both soluble and metallic, are available in the literature on greases, especially patent sources. (50-56) Such combinations aim at improvements of various kinds, such as resistance to oxidation, (57) decrease in gelling properties, (58) or, as in the following cup grease, (59) usefulness over a wider range of temperatures:

														1	Þ	e	r	Cent
Barium	soap		*	*			×	K			×	×	×		*			15
Calcium	soa	p		× .			*		*	×	*		*	*			×	5
Diglycol	ste	ar	a	ŧ	9		*											3
Mineral	oil .																·	77

Metallic soaps play important roles in a variety of specialized lubricants. Extreme pressure compounds,

for example, make frequent use of lead soaps. (2) Antimony soaps have also been employed as activators for extreme pressure lubricants. (60) The outstanding property of such lubricants is that they continue to function at pressures where the fluid film breaks down and ordinary lubricants fail. (24) Low temperature lubricants likewise call metallic soaps of fatty acids into use. (61) Rather interesting is the use of aluminum stearate in a composition that serves both as a lubricant and carbon remover for use in automobile engines. (62) Special lubricants for ropes and cordage sometimes contain metallic soaps like aluminum oleatc. (63,64)

Like their soluble counterparts, metallic soaps, especially the stearates, are useful in the dry state as lubricants for molding and extruding operations, wire drawing, metal stamping and cartridge making, as release agents in the plastic industry, and antisticking agents in rubber processing. (8) One patented composition, (65) described as a lubricant for use in drawing limed wire rods, is made from calcium myristate and a high melting wax such as carnauba or montan wax.

Also illustrative of the use of metallic soaps as dry lubricants is a powdered product consisting of equal parts of zinc stearate and talc. This simple combination is said (59) to be of advantage on machinery in mills where white goods are handled, since this lubricant will not cause discoloration.

REASES and oils have long been employed to protect metals against corrosion. Metallic soaps have various advantages when used in such products. Thus it has been found (66)

that in the production of slushing compositions, the percentage of wax dissolved in naphtha or in a similar solvent is greatly increased if solution is carried out in the presence of a gelforming metallic soap, like aluminum stearate. Specimens coated with such compositions have withstood the socalled "Navy salt spray test" and the "condensation bath" test. In another, more recent patent (67) describing a similar slushing composition for preventing corrosion, magnesium stearate was used in proportions sufficient to obtain the desired penetration-consistency relationship.

Similarly indicative is the use of aluminum stearate in a protective grease for airplane engines. Suitable for use on both the inside and outside engine surfaces, it consists of: (59)

								P	e	r Cen
Butanol					 ×					.10.0
Aluminum stearate		×		× 1	 ×	*			*	.10.0
Triethanolamine									×	. 6.5
Lard	×		×		 ×		,	*	×	.73.5

Not limited to lubricants and greases, metallic soaps are finding other important uses in the petroleum industry. Breaking down petroleum emulsions, for example, is a constant problem in this industry and on occasion metallic soaps have been used as demulsifying agents. (68) In the case of petroleum oil-in-water emulsion a solution of calcium oleate, in equal parts of alcohol and water, plus a small proportion of gelatin, is used and the solution centrifuged. (69)

Foaming, another problem of the oil fields, may sometimes be combatted by means of compositions containing metallic soaps. One such material has been prepared by heating together 40 parts of paraffin and 10 parts of aluminum stearate until solution occurs and then adding 50 parts of sulfonated tallow and heating further for a short time. (70) In passing it might be mentioned that metallic soaps may also be useful for preventing excessive foaming and frothing during the preparation of ketones from higher fatty acids. (71)

It is well known that the precipitation of insoluble metallic soaps is now an accepted means for treating oil wells to prevent "drowning" or otherwise to increase productivity. In

most such instances, however, the metallic soap is produced in situ by various means. (72) A departure from this procedure is seen in a recently described method (73) for increasing oil production and decreasing water production of wells. In this process, a packing material for an oil-bearing formation is made from a granular material coated with a heavy metal soap of an unsaturated fatty acid.

Metallic soaps are classed as valuable catalysts and some authorities consider this to be among their most important uses. According to Elliot, (2) metallic soaps have long been utilized to catalyze or alter the velocity of organic reactions. This property has been used quite extensively in the formulation of petroleum products and in the development of various processes. Thus, metallic soaps have found some application in the liquid phase oxidation of petroleum hydrocarbons to alcohols, aldehydes, acids and suc.,

#### (To Be Concluded)

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# SOAP MARKET SURVEY



DECLINING number of brands of soaps and cleaners for the housewife to pick from is reflected in the latest analysis of consumer buying habits con-

ducted in the Milwaukee area by the Milwaukee Journal. Only 71 different brands of toilet soap, for instance, are currently being offered in Milwaukee, as compared with 91 in 1944. The number of package and bar soaps for household laundry has dropped from 89 to 69. Package scouring cleansers currently stocked by Milwaukee grocers number only 36 as against 48 a year ago. Toilet bowl cleansers have shown a similar drop in number from 40 to 26, while the drop in water softeners and soap crystals has been from 91 to 57. This and other typical wartime trends in consumer buying habits are reflected in the 1945 version of this ar nual survey of a typical mid-western scap consuming area.

#### Toilet Soap

"Lux" is still the leading brand of toilet soap in Milwaukee, being preferred by 25.4 per cent of all Milwaukee housewives. Second in the list of best-selling toilet soaps is "Sweetheart," which dropped back slightly in favor but still numbers 17.7 per cent of the potential buyers as users. Third brand in order of preference is "Ivory," preferred by 14.7 per cent of Milwaukee housewives. "Palmolive" continues in fourth place with 13.5 per cent of the market, and "Camay" fifth with 11.7 per cent.

#### Bath Soap

"Lifebuoy" continues to hold it edge as the toilet soap most preferred by Milwaukee residents for use in the bath. Its popularity rating is 21.6 per cent as compared with 18.1 per cent for "Ivory," 17.5 per cent for "Lux" and 13.9 for "Sweetheart."

#### Fine Fabric Soaps

"Lux" flakes continue outstanding in the field of soap products used for washing fine fabrics, this brand being preferred by 43.6 per cent of Milwaukee housewives. "Ivory Flakes" have gained slightly in preference and hold a firmer grip on second place with a preference rating of 22.8 per cent. "Ivory Snow" and bar "Ivory" rate third and fourth. "Duz" is in fifth place, with a popularity of only 3.2 per cent, while a newcomer to the Milwaukee market, "Chiffon Flakes" holds sixth place.

#### Household Laundry Soap

The Milwaukee survey has established that 91 per cent of the families in this area own washing machines, and that only 7.5 per cent of Milwaukee families send the bulk of their wash to commercial laundries. This year Milwaukee housewives have had to make their laundry soap selection from among only 69 brands. This, as indicated above, is a sharp decline from the 89 brands offered in this market area in 1944, and even more of a decline from the 125 brands selling in Milwaukee back in 1942. "Fels Naptha" bar continues to head the list, although by a smaller percentage this year. It is used by 18.4 per cent of Milwaukee families in 1945, as compared with 21.6 per cent a year ago. "Oxydol" continues to hold second place, preferred by 16.7 per cent of the Milwaukee market. "Duz" registered a preference gain and moves into third place with 13.6 per cent, passing "Rinso" which drops back to fourth place with 13.2 per cent.

#### Soaps for Dishes

Still in first place, although recording a substantial loss in consumer preference, is "Ivory" bar, currently preferred by 19.1 per cent of Milwaukee housewives as compared with 23.3 per cent a year ago. "Duz" continues to gain greater popularity and now has a stronger hold on second place with a popularity of 13.5 per cent. "Ivory Flakes" have also registered a gain and have a firm grip on third place with 12.3 per cent use. "Oxydol" now holds fourth place with 8.9 per cent, having moved past "Rinso" since last year.

#### Hand Scouring Soaps

Figures were collected for the first time this year on the use of hand scouring soaps by Milwaukeeans. It was found that 40 per cent of all families use this type product, the largest per cent of users, as might be expected, being in the lower income bracket. Of those who pay \$30 or less monthly rent, some 45.9 per cent report using hand scouring soap. A total of 61 brands of such soap were reported stocked by Milwaukee retail stores. The leading brand is "4-U" which is bought by 33.7 per cent of the hand soap purchasers. Next is "Lava" which is the preferred brand of 32.3 per cent. Third in popularity is "Boraxo," bought by 12.3 per cent, with "Flash" fourth, 10.1 per cent.

#### Rug Cleaners

Another new item added to the survey this year was rug cleaner, found to be used regularly by 52.2 per cent of Milwaukee families. A total of 170 brands was found to be stocked,—with "Koto-Fom" reported the leading seller and preferred by 21.1 per cent of users. In second place is "Little Bo-Peep Ammonia," used by 13.8 per cent. Third most popular is "Powderene" bought by 8.6 per cent of users of rug cleaners.

#### Water Softeners

Water softeners and soap crystals scored an impressive gain in use this past year, perhaps due to the emphasis which has been placed on the need of soap conservation. Some 47.4

per cent of Milwaukee housewives now use this product regularly, as compared with 37.3 per cent in 1943 and only 28.6 per cent in 1941. Despite the increased use, the number of brands sold in this market declined rather sharply, falling from 91 in 1943 to a current total of 57. The most popular brand is "Climalene" which is far ahead of all competitors with a consumer preference rating of 53.2 per cent. This, incidentally, though a very high figure, still represents a decline from the standing of the same product in 1943 when its preference rating was 62.9 per cent. Second in the list is "Lite" which now enjoys a preference rating of 10.2 per cent as compared with its rating of 1.8 per cent two years ago. "Mel-O" drops to third place with a consumer preference rating of 9.1 per cent.

#### Wall Cleaners

A new high was reached this year in number of families using cleaning products for walls and woodwork. Currently, 76.1 per cent of all Milwaukee families are using a product of this type as compared with 73.8 per cent a year ago, and 67.3 per cent in 1943. The total number of brands now being sold in the Milwaukee market is 208, a substantial decline from the 276 offered two years ago. Leading seller is "Soilax" which enjoys 20 per cent of the market. "Badger Master Craft" is preferred by 15.1 per cent of buyers and "Climalene" by 9.8 per cent.

#### Bleaching Fluid

A further gain was registered this year in use of bottled bleaching fluid, which is now bought by 83.9 per cent of Milwaukee housewives as compared with 80 per cent a year ago and 70 per cent in 1941. The number of brands offered for sale continues to decline, with 72 currently on the mar-

Annual review of consumer preferences for soaps in the Milwaukee area shows consumption gaining...number of brands on the market registering sharp decline

ket as compared with 85 last year and 105 in 1942. The leading brand in popularity is "Hilex" which continues to improve its position each year. It is now preferred by 47.1 per cent of all Milwaukee purchasers of this product. "Mag," in second place, has a popularity rating of 11.4 per cent, while "Fleecy White" and "Linco" are next in the list.

#### Scouring Cleansers

Scouring cleansers are coming to be almost as universally used as toilet and laundry soaps. They are currently used by all but 2.4 per cent of the Milwaukee families, although as recently as 1941 only 90.3 per cent of Milwaukee families were regular buyers. The number of brands showed the general tendency to contract, dropping to 36 from last year's total of 48. "Kitchen Klenzer" is still the leading seller, being preferred by 30.9 per cent of users, with "Old Dutch" second with 26.6 per cent. "Bab-O," having the favor of 15 per cent of the buyers, is in third place.

#### Toilet Bowl Cleansers

A further gain was noted this year in use of toilet bowl cleansers, which are now regularly used by 67.3 per cent of all Milwaukee families, as compared with 63.5 per cent in 1944 and 61 per cent in 1943. Nevertheless the number of brands sold in the area registered a drop. They now number only 26 as against 40 last year. The leading seller is "Sani-Flush" preferred

by 49.7 per cent of buyers. "Bowlene" used by 40.4 per cent is second.

#### Liquid Shampoo

The Milwaukee survey shows a consistently increasing use of liquid shampoo by residents of that area. Used in 1941 by only 50 per cent of Milwaukee residents, liquid shampoo is now sold to 67.5 per cent of the potential buyers. The typical decline in number of brands is observed. Where there were 192 brands regularly stocked in 1941, there are now but 144. "Drene" is the leading seller, being preferred by 32.5 per cent of buyers. "Fitch's" holds second place with a popularity of 17.5 per cent. "Watkins" is in third place with 9.6 per cent and "Halo" in fourth with 8.5 per cent.

#### Lather Shaving Cream

Lather type shaving cream registers a small increase in use this year, being used by 37.9 per cent of Milwaukee men. This compares with 37.3 per cent in 1944, but represents a drop from 1941 when lather cream was used by 40.9 per cent. The number of brands on the market is now only 62 as compared with 80 a year ago. "Palmolive" is the most preferred brand, being the selection of 36 per cent of all buyers of the product, while "Williams" is next in popularity with a rating of 13.5 per cent. "Lifebuoy" is third with 12 per cent, and "Colgate" fourth with 9.3 per cent.

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down every possible pound of fats and oils which might be diverted to the soap kettle, castor oil has become an important soap making raw material during the past twelve month period. After running along for years at an average consumption rate of perhaps a million or a million and a half pounds, use of castor oil by soap makers suddenly jumped to over seventeen million pounds in 1944.

According to the April, 1945, issue of the Fats and Oils Situation, published by the Bureau of Agricultural Economics of the U.S. Department of Agriculture, 16,962,000 pounds of castor oil, were reported used by the soap maker in 1944, as against only 878,000 lbs. the previous year. The Bureau of Census figures run a bit higher than those of the Department of Agriculture and indicate castor oil consumption in 1943 as 1,091,000 pounds, as compared with 17,360,000 pounds in 1944. Regardless of the discrepancy between the two sets of figures, the tremendous increase in the amount of castor oil reported used by soapers in 1944 is noteworthy.

The 1944 consumption of cas-

tor oil for soap seems to have set some sort of record. Figures of the Bureau of Census on factory consumption of primary animal and vegetable fats and oils in the manufacture of soap, which begin with the year 1931, indicate nothing comparable in the intervening period to the 1944 usage of castor oil. For most of the 15 years, covered by the Bureau of the Census, annual consumption of castor oil in soap was in the neighborhood of a million and a half pounds.

Over and above a large increase in the reported use of castor oil in soap in 1944, the total apparent disappearance of that oil in 1944 also rose sharply above 1943 figures. The Department of Agriculture reports the total apparent disappearance of castor oil in 1944 as 200,558,000 pounds. In 1943, total disappearance was only 98,574,000 pounds. The largest single increase in consumption was in the paint and varnish industry. Percentagewise, however, consumption in soap showed the greatest increase in 1944 over 1943. In 1943, paint and varnish users consumed 16,347,000 pounds of castor oil, as compared with 76,-456,000 pounds in 1944.

Naturally, when consumption of a particular oil jumps as greatly as did castor last year, a number of questions come to mind. First and foremost is: Why? Second: Are soapers continuing to use comparable quantities this year? Will the trend to castor continue, etc.?

Before discussing the answers to these various questions, a consideration of the use of castor oil in soap and its relationship to other soap making oils may furnish some background information on last year's greatly expanded use of castor oil in soap. To begin with, certain soap makers are said to have been using increased quantities of this oil even before the outbreak of the war. In some soap specialties, shampoos and toilet soaps, castor oil is reported to modify the effects of coconut oil, reducing its harsh action on the skin without perceptibly interfering with its lathering and detergent prop-

In an article, "Linseed and Castor Oils," by Herbert Kranich, of Kranich Soap Co., Brooklyn, which appeared in the March, 1944, issue of Soap and Sanitary Chemicals, Mr. Kranich pointed out that castor oil "is

an excellent raw material to blend with coconut oil for the production of liquid toilet soaps" of both the hand and shampoo varieties. However, Mr. Kranich pointed out, castor oil is not used as extensively as linseed oil because of its "relatively high solubility as a soap." Castor oil "may be used up to 25 per cent without materially affecting the copious lather characteristic of straight coconut oil products. The addition of castor oil in this type of soaps (coconut oil) markedly improves the rinseability of the finished products and at the same time has that particular property . . . of eliminating to a marked degree the so-called 'bite' . . . of coconut oil shampoos. Being a very easily saponified oil it assists commensurably in the saponification, when blended, of other vegetable oils and fats, while in the finishing of soaps a proper alkaline balance is more readily obtainable. When castor oil is used in formulas for making paste or hard potash soaps, its use changes the physical characteristics of these products tending to make them softer."

At the time of the writing of the article referred to above, the possibility of compulsory use of castor and linseed oils in the soap kettle was under discussion. At the time, and for some months later, both linseed and castor oils were in fairly strong supply, particularly linseed. Nothing ever came of the possibility, however, because of a general easing in the oils and fats supply picture. Another factor at the time, however, was a stringent shortage of containers, which it is believed had the effect of "braking" production for the want of sufficient packaging materials for the soap.

ETTING back to the reason for the sudden and unprecedentedly large consumption of castor oil in 1944, the fact is that in the early part of that year the fats and oils situation had improved considerably. The possibility of the war in Europe ending suddenly caused WFA officials to begin to eye our exceedingly large stockpiles of certain oils and fats with some concern. In addition, the WFA had been under pressure for some time to release more fats and oils for various purposes

and with our large stockpiles this seemed as good a time as any for the release. Apparently the fact that 1944 flax seed acreage planting was almost 50 per cent below 1943 seems to have been overlooked. The immense stocks of lard that were piling up, a result of abnormally large hog slaughter, also contributed to our prosperity of fats and oils during the first and second quarters of 1944. It might have been foreseen, of course, that with an inevitable reduction in hog slaughter as with flax plantings, 1944 fat and oil supplies would not be duplicated in 1945. Nonetheless, that was the background of the picture when the WFA decided to ease up on restrictions governing fats and oils. They released a fairly substantial amount of castor oil, which was taken up in the main by a few companies in the soap industry. The latter part of 1944 saw fats and oils supplies tightening up again with the consequence that larger quantities of castor oil than ever before found their way into soap kettles.

Other industries, particularly protective coatings, were as hungry for an increased supply of fats and oils as the soapers. This explains the general increase in the use of castor oil for all industries. Dehydrated castor was being sought after and used by protective coatings manufacturers as a wartime replacement for tung oil.

Castor oil was originally put under allocation control in September, 1942. In October, 1943, the War Food Administration suspended for three months allocation of the oil. In December, 1943, the WFA announced that it was continuing the suspension of castor oil, with the exception of that used in the production of paint-reducing oils, for the period of January 1, 1944 through March 31, 1944. The suspension was again continued through April, and in May, 1944, the castor oil allocation order, WFO-32, was revoked effective May 8. Use of both oils, however, was still subject to quota restrictions of WFO-42.

Use of castor oil is very definitely not continuing this year at the 1944 rate. Figures for the first quarter just released by the Bureau of the Census show that only approximately 728,000 lbs. of castor oil went to the soap kettle, indicating that in all probability use of the oil in soap making in any substantial volume has ended, at least for the time being.

As a matter of fact it is now reported unofficially that increased military requirements for castor oil and decreased production of castor beans will require government restrictions to be applied to the use of castor oil shortly. If these regulations on use are reinstated, castor oil will be directed only to most essential end uses.

Prospects for availability of castor oil in 1945 are not as good as they were in 1944, based on import figures recently released by the Department of Commerce. Exports of castor beans from Brazil for the first 11 months of 1944 amounted to but 129,897 metric tons. In 1943 they were 155,684 metric tons. Exports of the oil from Brazil, which incidentally, is probably the largest producer, and our source for the oil and beans, amounted to 7,748 metric tons for the first 11 months of 1944. In the first 11 months of 1943, Brazil exported 12,627 metric tons of castor oil.

The Department of Commerce report does indicate that exports for 1945 will be greater than those for 1944, but not as great as those of 1943. The maximum total exports that can be conservatively expected during 1945, according to the Department of Commerce, are estimated at 140,000 metric tons of castor beans and 8,000 metric tons of castor oil.

Possibilities of augmenting the Brazilian supply of castor beans or oil by a domestic crop are extremely slight. Brazil and India are the two so-called natural castor bean growing countries. Although experiments in growing castor beans in the United States have been conducted with a measure of success for some time, the raising of castor beans commercially in the United States is not yet in prospect. There was some talk of it about two and a half years ago, when the shipping situation tightened up so badly that imports of castor beans and oil from Brazil were curtailed. However, for some reason, failure of the government to support

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# TRADE EWS...

#### New Plant for "Soil-Off"

Soil-Off Mfg. Co., California corporation, is erecting a plant at Decatur, Ill., for production of "Soil-Off," liquid paint cleaner, described as a blend of eleven chemicals, including a deodorizer, mild disinfectant, clarifier and drying agent. Mr. and Mrs. Bernard Nyman, Glendale, Calif., proprietors of the company, have announced that Walter Battles will be the new midwest plant manager, and Fred Seeburg, new sales manager. Advertising in Illinois newspapers and a 6-day-a-week program on Radio Station WBBM, Chicago, are presenting the product to Illinois housewives in the newly opened territory. National advertising is also carried in Good Housekeeping, Christian Science Monitor, McCall's and House Beautiful, while in Pacific coast territory Sunset, American Weekly and other local consumer publications are used, as well as the CBS and American Broadcasting chains. Distribution is through hardware, grocery, drug and department stores.

#### **Economics Club Elects Luckman**

Charles Luckman, president of the Pepsodent Co., division of Lever Bros., Chicago, has been elected treasurer of the Economics Club of that city.

#### Sims Heads C-P-P Foreign Dept.

William L. Sims, 2d, has just been elected a vice-president by Colgate-Palmolive-Peet Co., Jersey City, and will have charge of the foreign department. Mr. Sims has been with the company over twenty years. He joined the Palmolive Company in 1924 as salesman and later became southern division drug supervisor. In 1927, he was sent to Italy and organized the Italian company with headquarters in Milan. In January, 1930, Mr. Sims was named continental European man-

ager of ten subsidiaries on the continent, with headquarters in Paris, France. After the outbreak of hostilities, he returned to the United States



WILLIAM L. SIMS, 2nd

in June, 1940. He was appointed assistant to the president in 1941. From November, 1943, to July, 1944, he served as a price executive in the Chemicals and Drug Branch of the Office of Price Administration in Washington.

Mr. Sims, a veteran of World War I, was born in Birmingham, Ala., and attended the Alabama Polytechnic Institute in Auburn, Ala. He is a resident of Orlando, Fla., where he pursues his hobby of citrus growing on his groves in Orange County.

#### Squibb Earnings Rise

A net income of \$1,818,546, after all charges including a \$6,241,727 provision for United States and foreign income taxes and renegotiation, was reported for the nine months ended Mar. 31, by E. R. Squibb & Sons, New York. The income is equivalent to \$2.96 a share on the common stock and compares with \$1,667,394, or \$2.78 a common share earned in the nine months ended Mar. 31, 1944, when tax and renegotiation provisions amounted to \$4,120,145.

#### BIMS Golf at Baltusrol

The first BIMS of New York golf outing of the 1945 season was scheduled to be held at Baltusrol Golf Club, Short Hills, N. J., June 28. The second golf outing is to be held at Sleepy Hollow Country Club, Scarsborough - on - Hudson, N. Y., Thursday, July 26, the group announced.

#### Army Fat Salvage Makes Soap

Almost 40,000 pounds of soap were delivered to Army ration dumps in Italy during March that had been made in that country from waste fats collected by a single company, the Office of The Quartermaster General in Washington revealed early in June. The company, the 230th Quartermaster Salvage Collecting Company, received more salvage during the period of March 16-31 than for any like period during the history of the unit's operations. An average of 80,306 pieces of salvage were received daily during the record period, which was enough to make 38,143 pounds of soap.

#### TGA Protests Toiletries Tax

The Toilet Goods Association has sent a letter to three officials of the province of Quebec protesting against a new, proposed six per cent luxury tax on toilet goods sold at retail. At the present time there is a 25 per cent excise and an eight per cent sales tax on toilet goods.

#### Fiedler Joins Bjorksten Labs.

Stuart O. Fiedler, formerly supervisor of a research division in Quaker Chemical Products Corp., Conshohocken, Pa., recently left that position to join Bjorksten Laboratories, Chicago, as a research associate. Mr. Fiedler, who holds a B.S. degree in chemical engineering was with E. I. du Pont de Nemours & Co., Wilmington, for 15 years.

#### British Soap Ration Cut

A cut in the British ration of soap went into effect May 27, it was learned recently. The reduction in the soap ration will amount to one-eighth of the present allotment. The cut will be effected by allowing three-quarters of the normal allocation in one period and giving the full allotment in the following period. A number of exceptions are made to the ruling, namely, for babies and young children, while soap for industrial purposes, laundry and washer women, and pithead and other baths remains at its present level.

#### Chi. Exposition Opens Jan. 18

Opening of the first of what is expected to be an annual "Products of Tomorrow Exposition" will be held in Chicago, Jan. 18, 1946, according to a recent announcement. The opening is "subject to military exigencies," the announcement states. Facilities for the exposition include: The Chicago Coliseum, the North Hall Exhibition Building, the Armory and the Administration Building. The exposition will comprise two main divisions, consumer and industrial products, with the addition of others as the demand requires. A million square feet of space will be available for display. The "Products of Tomorrow Exposition" will be an annual event to provide a springboard for the introduction of new products and new designs by all industry. The exposition will be open as long as weekly attendance warrants it, according to the announcement.

#### Missouri-Kansas Co. Remodels

Missouri-Kansas Chemical Co., Kansas City, recently announced completion of a remodeling and building program that consisted of joining its three buildings into a single, 30,000 square feet unit on a single floor level. A feature of the newly remodeled structure is three loading docks.

#### Boston BIMS to Golf July 19

The BIMS of Boston found it necessary to cancel their golf outing originally scheduled for June 19, because of the proximity to Bunker Hill Day, celebrated June 18. The party has been postponed until July 19 and will be held on that date at the Woodland Golf Club. Pete Niles, chairman of the entertainment committee, is booking reservations for the new date.

## Bobrick Making More Dispensers

Bobrick Manufacturing Corp., Los Angeles, has resumed manufacture of soap dispensers at its Los Angeles plant, the company announced late in June. Now being shipped are Model 13 and Model 21 liquid soap dispensers, while Model 31 for powdered soap is said to be rapidly nearing assembly stage. Aug. 15 is the approximate date set for initial shipments of Model 31. There will be no increase over 1942 prices, the company announcement states. The company also manufactures precision hydraulic valve equipment for the Armed Forces.

#### Shulton Editorial Employes Dine

Members of the editorial staff of The Shulton Magazine, house organ of Shulton, Inc., New York, were guests at a dinner party at the Copacabana, New York night club, in celebration of the second anniversary of the company publication, it was announced recently. Shulton has another publication Home Front News, which is sent monthly to all Shulton men in the armed forces. Both publications are distributed to all employees. Miriam Gibson, publicity director, is managing editor of The Shulton Magazine.

#### Bartlett Hooker President

E. R. Bartlett, formerly executive vice-president of Hooker Electrochemical Co., Niagara Falls, N. Y., was elected to succeed H. M. Hooker, who has been elevated to chairman of the board of directors, it was announced June 21.

#### Chicago Assn. Golf July 24

The Chicago Perfumery, Soap and Extract Association has scheduled a golf tournament for July 24 at Olympia Fields Country Club, this being the third in the season's series for members and guests. Medinah Country Club will be the place for the next meet on Aug. 21 and the final contest will be at Edgewood Valley Country Club Sept. 12.

#### Review P&G Employee Relations

Procter & Gamble Company's employee relations program was the subject of a series of articles in the Chicago Daily News last month. Features discussed included the long standing guarantee of stable, year-round employment, the profit sharing plan and the pension plan. Regarding the guarantee of steady employment, the writer says P. & G. "has demonstrated its feasibility," an achievement which he declares is "a challenge for thousands of other industries with equal opportunity to do as well."

#### Laundries for Overseas Troops

More than 100 fixed laundries, 60 of them shipped from the United States, have been established for hospitals and troops overseas, while scores of mobile laundries have been sent to battle areas for use of field hospitals and to provide clothing exchange service. This was revealed recently in a release announcing the observance by the Quartermaster Corps of the Army of its 170th anniversary, June 16.

#### Penna. Salt Advances Murphy

Frank E. Murphy, formerly assistant to the manager of the research and development department, has been appointed director of the development division of that department of Pennsylvania Salt Manufacturing Co., Philadelphia, the company announced June 21. He will be in charge of chemical engineering activities including pilot plant operations, engineering research and related fields of work. He will make his headquarters at the Whitemarsh Research laboratories.

#### ACS Medal to Schwarcman

The Western New York Section of the American Chemical Society presented Dr. Alexander Schwarcman, chief research chemist of Spencer Kellogg and Sons, Inc., Buffalo, with the Jacob F. Schoellkopf memorial medal award of 1945 at a dinner given by the Section at the General Brock Hotel, Niagara Falls, Ontario, May 24. The award was based on Dr. Schwarcman's "contributions to the processing, refining and modification of vegetable oils."

# Source of Firsts"

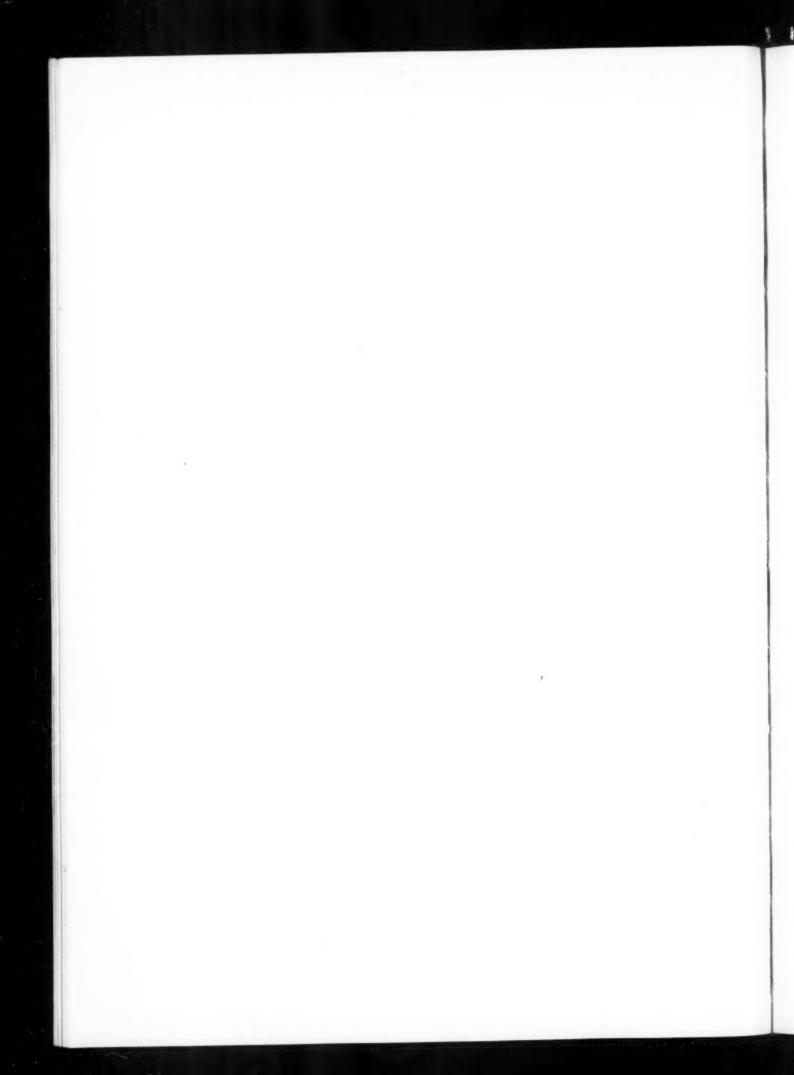


Modern Research Laboratory at Niagara Plant as interpreted by the artist, John Gaydos

THE FACT that Niagara was the first to produce several important electro-chemical products in this country is due in great part to the efficiency of its research. Niagara's research activities are under the supervision of men of long and thorough experience in electro-chemical development, manufac-

ture, and usage. This has enabled Niagara to give valuable cooperation to many industries using such products in the processing of war materials. It will prove of equal value in helping these industries convert efficiently to peacetime manufacture. Look to Niagara for experienced chemical service.





#### Container Shortage Continues

Despite a continuing high rate of production of containers, a scarcity continues to exist and will be felt for some time. No substantial relief is expected until military demands are sharply reduced. This probably means not until the end of the war with the Japs, since container requirements for Pacific shipments will be heavier than for Europe. The shortage of containers for civilian use is particularly stringent in glass, paper and cans. The one bright spot in an otherwise gloomy picture is in collapsible tubes. Cutbacks in Army contracts have made lead available for the manufacture of approximately 3,000,000 additional collapsible tubes for civilian use during the second quarter of 1945, the War Production Board announced June 15. This is an increase of approximately 13 per cent over the number originally permitted for civilian purposes, WPB stated.

Most other containers have been particularly tight during the second quarter of this year. The AA-3 rating, for which containers have not been available to fill all orders, covers soap and other civilian products. When container relief comes it will probably be first felt in fiber containers and wooden boxes, it is thought. Emphasizing the container shortage, the Can Manufacturers' Institute recently announced a new tin can salvage campaign to help alleviate the serious reduction in the tin stockpile. The Institute points out that 90 per cent of the United States pre-war tin supply is still in the hands of the enemy. Even when we recover the mines it will take two years to replace equipment and bring the mines back to normal productivity.

#### Rheem Postwar Plans Told

Postwar plans of Rheem Manufacturing Co., San Francisco, drum and container manufacturers, were revealed in a recent, lengthy release from the company that also tells of the growth of the company over the past nine years. One of the features of the Rheem postwar plans is the decentralization of its plants with one or more manufacturing units in every



The four women above, who are sisters, have worked a total of 170 years for Colgate-Palmolive-Peet Co., Jersey City, N. J., and its predecessors. E. H. Little, president, is presenting Miss Josephine Welz, 67, with a wrist watch on completion of her 50th year with the company. Her sister, Elizabeth, left worked for the company 35 years and retired on a pension in 1933; sister Amelia, who is still with the firm, went to work for it in 1902; while the eldest sister, Mary, began with Colgate in 1887 and retired in 1927. Josephine is retiring on a pension.

major marketing area in the United States. Rheem's plans for manufacturing other than container items is also revealed in the release. During the war the company has made a number of-items for military use.

#### Tall Oil Order Issued

The War Food Administration issued War Food Order No. 136, regulating distribution and use of tall oil and limiting the inventories of users, it was announced June 27. The order, which went into effect June 28, provides that preference on deliveries of tall oil will be given to essential users who declare that the oil will not be used for soaps, protective coatings and several other types of products. Producers, distributors and refiners requiring tall oil for the fulfillment of primary certified orders may issue secondary certified orders. Such orders do not take precedence over primary certified orders.

#### CD&CA Announces Golf Schedule

The Chicago Drug & Chemical Association announced last month that it will hold three golf outings during the summer. The first was to have been held June 26-27 at Olympia Fields Country Club. It was an overnight affair. The second CD&CA outing will be held July 20, at Sunset Ridge Country Club and the third and final outing will be held August 7, at Midlothian Country Club.

#### Pompa Joins J. R. Watkins Co.

Dr. J. J. Pompa has been appointed chief chemist of the J. R. Watkins Co., Winona, Minn. succeeding Dr. Otto Sobell who resigned several months ago. Dr. Pompa prior to joining Watkins was for five years associated with the Standard Pharmacal Co., Chicago, and is well known in the drug, cosmetic and allied fields in the middle west.

#### CSA to Golf July 12

The second golf tournament and outing of the Salesmen's Association of the American Chemical Industry of the 1945 season will be held at Garden City Country Club, Garden City, Long Island, July 12. William Harmon, of Calco Chemical Division of American Cyanamid Co., Bound Brook, N. J., chairman of the entertainment committee is in charge of reservations.

# SPECIFY "GENERAL"

# ··· for better soapmaking and detergent chemicals



TODAY'S cleansing requirements call for soaps and detergents that are efficient and safe—for both domestic and industrial use. In producing cleansers that meet these demands of the day, soap and detergent manufacturers rely on General Chemical Company products ... quality chemicals "proved in production" throughout the Industry.

- \*Tetrasodium Pyrophosphate . . . Helps build more abundant soap suds . . . washes clothes whiter . . . steps up cleansing action of soaps. Keeps iron salts in solution, prevents formation of "rings," helps eliminate scale formation in machine washers, and allows an increase in percentage of builders. TSPP, Anhydrous is for the soap manufaturer. TSPP, Diamond Grade is particularly suited for incorporation into detergent mixtures.
- ★ Sodium Silicate Solution . . . Available in a number of grades and strengths ranging from 38° to 60° Baumé. Shipped in steel drums of 55 and 110 gallons, and tank cars.
- ★ Trisodium Phosphate... General Chemical Trisodium Phosphate emulsifies oils and greases, removes dirt quickly and thoroughly. It is a good water softener and soap builder, and is extremely economical. Available in four grade sizes—fine, standard, medium, coarse.
- \* Sodium Metasilicate . . . A definite aid in wetting. It has a high pH, is a "buffered cleanser," suspends dirt, and softens water. Easier and safer to handle than caustic.
- ★ Sodium Bifluoride . . . a laundry sour. Neutralizes the last traces of soap; removes rust stains from textiles.



#### Specify These General Chemical Products, Too

Sulfuric Acid • Muriatic Acid • Acetic Acid • Sodium Sulfite • Oxalic Acid Sodium Bisulfite • Sodium Sulfate • Aluminum Sulfate • Aluminum Chloride Disodium Phosphate

#### GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.)
Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas
City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. L.)
San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)
In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

#### Lever Bros. 50 Years Old

Lever Brothers Co., Cambridge, is currently observing its golden jubilee in the United States. Founded and controlled by Unilever, Ltd., of Great Britain, in 1895, Lever Brothers Co. grew in the 50 year period from a 50,000 case annual sales to one of the largest soap companies in the United States. The company, which is planning no unusual celebration this year, has plants in Cambridge, Hammond, Ind.; Edgewater, N. J.; Baltimore; St. Louis and Chicago. Its soap sales figures run well into millions of cases, not to mention its shortening and drug products. Sales figures have never been revealed. The current soap shortage and some uncertainty as to the actual date of Lever's first entry into the American market have contributed to the toning down of any sort of elaborate celebration of the company's fiftieth birthday, although some advertising copy featuring the Lever Golden Jubilee has been run.

#### Rosin Order Amended

An easing on inventory restrictions of rosin and a definition of soap are provided for in a recently issued, amended form of M-387, the rosin conservation order. In the newly revised form of the order the three months' inventory restriction on acceptance of rosin deliveries applies on the basis of the manufacturers' current rate of operation, and not, as heretofore, to one-quarter of his rosin consumption during the calendar year of 1944. It further provides that a consumer may accept a standard commercial shipping unit if his inventory before acceptance is within the prescribed limit and if such delivery does not cause his inventory to exceed twice the maximum limit prescribed by the order. The definition of soap in the order is: ". . . the water soluble products formed by the saponification or neutralization of rosin, fats, oils or their fatty acids with organic, ammonium, sodium or potassium bases; or any composition containing such products. The term includes all types of shaving soaps and shaving creams but shall not include soap used for non-detergent

purposes and soap for industrial degreasing of metal tooling or metal fabrication."

The quota on use of rosin in soap for civilian orders remains at 25 per cent of the amount used in the corresponding quarter of 1944, or 2700 pounds (five drums), whichever is greater.

#### Canada Faces Fat and Oil Cut

A 12 per cent cut in fat quotas for soap manufacture in Canada may be expected soon, it was learned recently. This is said to be in line with a recent reduction in ammunition manufacture and a consequent lessening in the military need for glycerine. Canadian soap manufacturers have been recciving 100 per cent of the oils and fats they used in 1941. Soap production is said to be at the 1941 level and while there is no shortage at the manufacturers, retail shortages, reflecting consumer buying to beat the cut in oils and fats quota, have been reported. The expected relief in demand by the armed forces is expected to be offset by demands for relief and rehabilitation

#### Tighten Glycerine Inventories

Inventory restrictions on glycerine were tightened by the War Food Administration, June 21, when it issued WPO 134, which restricts inventories of glycerine users to a 30-day supply and of glycerine distributors to a 20-day supply, effective June 21. The order reflects reduced stocks on the part of producers and refiners who supply the military demands. The effect of the restrictive order will be to build up these depleted stocks in order to meet any emergency demand for glycerine. United States stocks of glycerine are above the minimum levels considered necessary to avoid restrictions on use, the WFA said in issuing the new order. Under provisions of WFO 134, every person who uses more than 1,150 pounds of glycerine in any calendar month must file with the Bureau of the Census, Washington 25, D. C., Bureau of the Census Form BM-1, on or before the fifteenth day of the following month.

#### P & G Again Largest Advertiser

Procter & Gamble Co., Cincinnati, in 1944--the third consecutive year-was again the largest advertiser in newspapers, magazines, radio and farm journals. Two other soap companies, Lever Bros. Co., Cambridge, and Colgate-Palmolive-Peet Co., Jersey City, occupy third and seventh places respectively. This was revealed recently in the sixth annual edition of "Expenditures of National Advertisers in Newspapers, Magazines, Farm Journals and Chain Radio," published by the bureau of advertising of the American Newspaper Publishers Association. The survey covers the four major advertising media. While P & G and Lever Brothers remained in the same rating positions they occupied last year, Colgate-Palmolive-Peet Co. moved up from ninth to seventh place. The three soap companies were first, second and fourth in newspapers alone. The survey lists all national advertisers who spent \$25,000 or more in at least one of the four advertising media it covers. Procter & Gamble's total advertising expense for the four major media was listed at \$22,697,572; Lever Brothers pent \$12,730,611 and Colgate-Palmslive-Peet's expenditures were listed as \$8,678,073.

#### C. E. Kinney, Hercules, Retires

C. E. Kinney, assistant to the director of operations, naval stores department of Hercules Powder Co., Wilmington, who for the past 40 years has been associated with the wood naval stores industry, was to retire from the company June 30, it was announced last month. Mr. Kinney had been an employe of the Hercules Naval Stores Department for the past 25 years. He is a 1905 graduate of the University of Michigan, where he received his A. B. degree in chemical engineering. He is a native of Kansas City, where he plans to return to live with his wife early in August.

#### Bulgarian Oil Distiller Dies

Dragoi Batzouroff, senior partner of Batzouroff & Co., Sofia, Bulgaria, oil of rose distillers, died in a New York hospital, June 18, after a brief illness. THESE TIMELY
OFFERINGS
WILL INTEREST
SOAPMAKERS

#### RESINOID

## LABDANUM

Both the Resinoid and the Concrete are of excellent quality—normal in every respect. They impart Labdanum's characteristic odor—clean, fragrant, tenacious. Good fixatives... interesting modifiers. Write for samples and prices.

## RESINOID

CONCRETE

## OAK MOSS BODY

This is an excellent pound for pound replacement for first quality Bohemian Oak Moss. It has the same strength and delightful odor character as the genuine. In physical appearance, it is somewhat less viscous. Send for further details.



# FRITZSCHE BROTHERS, Inc.

#### Soap Best PW Barter Medium

Soap included in Red Cross packages to British prisoners of war, held in Poland, was one of the principal mediums of exchange in barter agreements worked out between prisoners, their captors, and foreign workers in that country, according to British prisoners recently returned home. Soap issued by the Germans to British prisoners was named "RIF." It had an extremely gritty nature and an unpleasant odor. The Polish and German people in the prison camp areas in Poland were forced to use it as it was the only available type, but they took every opportunity to barter for the British and American soaps which came in Red Cross parcels.

The personal issue of soap to prisoners in this particular camp was one small cake of "RIF" per month for washing and one small cake of shaving soap. The latter was described as being passably useable and as being better than the washing soap which contained a great deal of sand or other gritty filler. But for the soap included in the Red Cross parcels prisoners would have been in a very difficult position. Men sending their laundry out of the camp to be washed by Polish housewives had to supply their own soap for the purpose and many of the laundrywomen took the work merely to share in the superior soap which they thus obtained.

#### Western Chemical's New Quarters

Western Chemical & Supply Co. announced early last month their occupancy of a 50 x 100 foot building with full basement at 612-14 Broadway, Lubbock, Tex. The company distributes laundry, dry cleaning, sanitary and janitor supply needs for the section. J. W. McKee is manager of the new Lubbock distributorship.

#### Detrex L. A. Branch Moves

New and larger Pacific Coast regional offices have been established by Detrex Corp., Detroit, at 318 W. Ninth St., Los Angeles 15, the company announced early last month. S. B. Crooks, Pacific region manager, is in charge of the new office, which functions as sales and service head-



The above "hefore and after" display in the household section of the Andrew Williams market in Oakland, Calif., increased sales of wax and polish by about 35 per cent. The display features miniature furniture which is scratched and battered before but shows the results of the polish and wax after treatment. Sale of related items also increased.

quarters for the Pacific Coast and Rocky Mountain states. In addition to controlling division offices in the territory, the Los Angeles branch supervises all local stocks of degreasing solvents and standard metal cleansing machines.

#### Chicago Drug Assn. Dinner Dance

The Chicago Drug & Chemical Association's annual spring dinner-dance at the Drake Hotel, May 19, brought out 300 members and their ladies. Dale Ruedig of Eli Lilly Co., was chairman of the entertainment committee.

#### Fritzsche Appointments Announced

Fritzsche Brothers, Inc., New York, announced two executive appointments at a special meeting of the board of directors of the company at the New York offices, June 12. Gus Wohlfort, credit manager was appointed to the newly created office of comptroller, while Daniel A. Neary was advanced to the position of assistant secretary. Mr. Wohlfort joined the company about 20 years ago, while Mr. Neary has been with the

firm since 1933. The position of assistant secretary to which Mr. Neary has just been appointed was formerly occupied by John J. Montgomery, vice-president and secretary.

#### Acquit Du Pont, R. & H.

E. I. du Pont de Nemours & Co., Wilmington, and Rohm & Haas Co., Philadelphia, were acquitted in the plastics, anti-trust trial concluded in Newark, N. J., June 20. Two counts of the indictment against Du Pont, charging monopoly and conspiracy to monopolize, were dismissed at the instance of the prosecution before the case opened. A separate indictment concerning monopoly and restraint of trade in the denture field was also quashed.

#### May Raise Western Soap Prices

The Office of Price Administration late last month announced that retail stores in 11 Western and Far Western States may apply for higher ceilings on household soaps and cleansers if delivered costs are "unusually" high.



#### THAT PACKS A SHELLACKIN'

THE lethal qualities of the United States destroyer, as of all our naval craft, have made a lasting impression on the Japs.

Shellac plays an important role in helping to maintain this deadliness. Shellac increases the effectiveness of electrical insulation, helps to protect guns and ammunition against harm from salt air and water, affords equal protection for thousands of peacetime products.

Protecting shellac itself calls for special "know how" in packaging ... demands containers with special characteristics.

To make sure of packaging their product safely, William Zinsser and Company, Inc., New York, makers of Bulls Eye Brand shellac, use Crown cans.



CROWN CAN COMPANY • NEW YORK • PHILADELPHIA • Division of Crown Cork and Seal Co., Baltimore, Md.

## BIDS AND AWARDS

#### WFA Contemplated Soap Purchases

Contemplated purchase of 2,-250,000 pounds of soap products was announced June 13, by the War Food Administration's Commodity Credit Corporation, Washington, D. C. Of this quantity of soap, 50,000 pounds will be in the form of one-ounce shaving sticks; 45,000 pounds will be oneounce tubes of shaving cream; 30,000 pounds will be two and one half ounce tubes of shaving cream; 700,000 pounds will be nine-ounce cartons of soap powder; 300,000 pounds will be 24-ounce cartons of soap powder; 650,-000 pounds will be five-ounce cartons of soap flakes; 350,000 pounds will be in the form of 121/2 ounce cartons of soap flakes and 125,000 pounds will be in the form of approximately 14-ounce cartons of scouring powder. Delivery is required in equal monthly instalments during the third and fourth quarters of 1945. Earliest deliveries offered may be given preference. Offers were required to have been received by 5:00 p.m., June 20.

#### Justice Department Bids

Sinclair Refining Co., Ft. Worth, Tex., submitted the low bid of 58c on 200 gallons of liquid insecticide which was accepted, in a recent opening for miscellaneous supplies by the Department of Justice, Englewood, Colo., office. Among the other bidders in the opening and their bids were: Barrett-Chilton Motor Co., Anthony, New Mex., 85c; J. M. Booth & Co., El Paso, Tex., \$1.05; Brilco Labs., Brooklyn, \$1.03; Capitol Chemical Co., Washington, D. C., \$1.02; Selig Co., Dallas, Tex., \$1.40; Shell Oil Co., Houston, 60c and 75c; Standard Oil Co. of Texas, El Paso, 67.5c; Washington Sales Co., Washington, D. C., \$1.20; and West Disinfecting Co., Dallas, \$1.60.

In a later opening by the same department for its Petersburg, Va., office, the following bids were received on an unspecified quantity of cleaning liquid: Industrial Distributors, New York, 60c maniply aluminum and \$66 cleanser; Wilson Chemical Co., Rye, N. H., 55c maniply aluminum and \$60.50 cleanser.

In another recent opening by the Department of Justice, the following bids were submitted on 110 gallons of liquid insecticide for the Terre Haute office: R. M. Hollingshead Corp., Camden, N. J., 98c; U. S. Sanitary Specialty Corp., Chicago, \$5.25; Huntington Labs., Huntington, Ind., \$1.50, drum charge \$2; and Barton Chemical Co., Chicago, \$1.

#### Sweeping Compound Award

In a recent opening for miscellaneous supplies by the Philadelphia Navy Yard, Paxson Co., Philadelphia, submitted a low bid of \$825 on an unspecified quantity of sweeping compound. The only other bidder, Sanitary Soap Co. Paterson, N. J. entered 1 bid of \$1,000.

#### WFA Soap Purchases

The following soap awards have been announced in recent openings for miscellaneous supplies by the War Food Administration, Washington, D. C .: S. Strunz & Son, Pittsburgh, 150,000 pounds of laundry soap at 7.9c a pound; John T. Stanley Co., New York, 250,000 pounds of laundry soap at 7c and \$40,000 pounds of laundry soap at 6.8c; J. Eavenson & Sons, division of Wilson & Co., Camden, 70,-000 pounds of toilet soap at 18.99c a pound, 70,000 pounds of toilet soap at 21.962c and 70,000 pounds of toilet soap at 21.559c; Lever Bros. Co., Cambridge, Mass., 985,800 pounds of toilet soap at 23.68c and 375,000 pounds of toilet soap at 22.2c; Allen B. Wrisley Co., Chicago, 450,000 pounds of toilet soap at 15c; Iowa Soap Co., Burlington, Ia., 750,000 pounds of carbolic medicated soap at 16.08c; Procter & Gamble Distributing Co., Cincinnati, 720,000 pounds of yellow laundry soap at 6.702c; Newell Gutradt Co., San Francisco, 234,000 pounds of yellow laundry soap at

6.975c; Swift & Co., Chicago, 320,-625 pounds of toilet soap at 15.88c and 740,000 pounds of yellow laundry soap at 6.262c; Standard Soap Co. of Camden, N. J., 500,000 pounds 8c a pound; U. S. Soap Mfg., Philadelphia, 1,500,000 pounds of blue mottled soap at 8.5c a pound; and Lever Bros. Co., Cambridge, Mass., 336,360 packages of powdered laundry soap at 8c a package.

#### FWA Toilet Soap Bids

The following bids were announced on an unspecified quantity of liquid toilet soap in a recent opening for miscellaneous supplies by the Public Buildings Administration of the Federal Works Agency, Washington, D. C.: Crystal Soap & Chemical Co., Philadelphia, \$2,392.50; R. M. Hollingshead Corp., Camden, N. J., \$2,700; Penetone Co., Tenafly, N. J., \$3,150; Wm. Messer Corp., New York, \$3,364.50; and Puritan Co., Atlanta, \$3,375.

#### Panama Canal Soap Awards

Kamen Soap Products Co., Barberton, O., submitted a bid of \$1,704, which was accepted on an unspecified quantity of soap powder in a recent opening for miscellaneous supplies by the Panama Canal, Washington, D. C. At the same time it was announced that a bid of \$360 on an unspecified quantity of grit soap by Pioneer Soap Co., San Francisco, was accepted in a recent opening for miscellaneous supplies by the Panama Canal, Washington, D. C.

#### Treasury Dept. Soap Bids

Among the bidders on two soap items in a recent opening for miscellaneous supplies by the Treasury Department Procurement Division, Washington, D. C., were: Harley Soap Co., Philadelphia, 6.9c a pound on 12,000 pounds of paste soap; Unity Sanitary Supply Co., New York, 10c a pound on 36,000 pounds of soap powder; Western Chemical and Mfg. Co., Chicago, 6.75c a pound on 12,000 pounds of paste soap; Wolverine Chemical Co., Detroit, 12c on 12,000 pounds of paste soap.

## HYDRO-MUGAL

Our sensational substitute for Hydroxy-Citronellal

Sweet, persistent, stable, of equal strength, of great usefulness in all products requiring hydroxy-citronellal

> Write us on your letterhead for a sample



601 WEST 26th ST. NEW YORK 1, N. Y.

## NEW RADE MARKS

The following trade-marks were published in the June issues of the Official Gazette of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

#### Trade Mark Applications

ELECTRO-PURJ-IT—This in upper case, bold letters for general purpose cleaning compound. Filed Jan. 26, 1944 by Trojan Products & Mfg. Co., Chicago. Claims use since Mar. 11, 1938.

MYSTIKUM—This in lower case, extra bold face letters for tooth paste, disinfectant and chemical rust preventives. Filed Aug. 30, 1944 by Ludwig Scherk, Inc., New York. Claims use since Sept. 1, 1920.

TRISENA—This is in upper case, extra bold letters for tooth paste, disinfectant and chemical rust preventives. Filed Aug. 30, 1944 by Ludwig Scherk, Inc., New York. Claims use since Sept. 1, 1920.

BACTEREX — This in upper case, extra bold letters for general disinfectant. Filed Feb. 13, 1945 by Sperba Products Mfg. Co., Brooklyn. Claims use since Jan. 2, 1945.

WEEDICIDE—This in upper case, bold italic letters for weed killer. Filed Mar. 3, 1945 by Wm. T. Thompson Co., Los Angeles. Claims use since Jan. 26, 1945.

HYDROBREAK — This in upper case, extra bold letters for detergent. Filed Dec. 29, 1944 by Diamond Alkali Co., Pittsburgh. Claims use since Sept., 1943.

SESQUILATE — This in upper case letters for detergent. Filed Dec. 29, 1944 by Diamond Alkali Co., Pittsburgh. Claims use since Dec. 8, 1944.

Soax—This in upper case, jumbo letters for liquid cleaning and degreasing compound. Filed Jan. 29, 1945 by E. A. Gerlach Co., Philadelphia. Claims use since Mar. 4, 1943.

Foto Soap—This in upper case, open and lower case script letters for soap. Filed Feb. 14, 1945 by Ray E. Hulbert, Rockaway, N. J. Claims use since Aug. 3, 1944.

FIRCO — This in upper case, extra bold, black letters for mildew-proofing material. Filed May 8, 1944 by General Plastics Mfg. Co., South Tacoma, Wash. Claims use since May 6, 1944.

IRIUM—This in upper case, bold letters for water soluble ingredient for dentifrice. Filed June 1, 1944 by Lever Brothers Co., Cambridge, Mass. Claims use since Mar. 30, 1944.

OMNIS ORBIS WARNER—This in upper case reverse letters above and below a quadranted globe for disinfectant, parasiticide, deodorant, antiseptic, tooth powder and germicide. Filed Nov. 23, 1944 by William R. Warner & Co., Inc., New York. Claims use since 1932 as tooth powder and germicide, since Sept. 1939 as deodorant and antiseptic and since Oct., 1939 as parasiticide.

LINOPINOL—This in upper case, bold letters for liquid floor, furniture and woodwork cleanser and polisher. Filed Aug. 14, 1944 by Barrymore Carpet Co., New York. Claims use since Jan., 1935.

MINIT-FOAM — This in upper case, reverse letters for cleansers for upholstery and other textiles. Filed Apr. 11, 1944 by Diamond Chemical Co., San Francisco, Calif. Claims use since Feb. 29, 1944.

MARKSMAN — This in upper case letters for soap and shaving cream. Filed Sept. 27, 1944 by Eugene Coleman, Jr., Los Angeles. Claims use since Aug. 17, 1944.

TROPIC-TOXIC — This in upper case, bold letters for fungicide for addition to a varnish, paint or lacquer. Filed Jan. 16, 1945 by Mer-Q-Ree, Inc., Bethesda, Md. Claims use since Jan. 2, 1945.

SPORTSMAN — This in upper case letters for insect repellent. Filed Feb. 9, 1945 by John Hudson Moore, Inc., New York. Claims use since Jan. 15, 1945.

FLEA-NOT—This in upper case, extra bold, black letters for insecticide. Filed Mar. 14, 1945 by Nott Manufacturing Co., Mt. Vernon, N. Y. Claims use since Jan. 19, 1938.

(Drawing of a square design of plain white, perpendicularly lined and solid black areas)—for floor wax. Filed July 3, 1944 by Columbia-Bedford Corp., New York. Claims use since Apr. 12, 1944.

VITA-CLOR — This in upper case, extra bold, black letters for furniture, wood and floor polishing and cleaning preparation. Filed Sept. 23, 1944 by Vita-Var Corp., Newark, N. J. Claims use since Aug. 10, 1944.

(Drawing of pattern of suit case)—for toilet soap. Filed Feb. 8, 1945 by Iowa Soap Co., Burlington, Ia. Claims use since Jan. 2, 1945.

SPELLBOUND — This in upper case, medium letters for toilet soaps. Filed Feb. 21, 1945 by Lynette Perfumes, Inc., New York. Claims use since June, 1943.

Con-Cen-Tro—This in upper case, bold letters for liquid soap. Filed Feb. 26, 1945 by International Chemical Co., Chicago. Claims use since July 1, 1928.

FORMACO—This in upper case, extra bold letters for toilet bowl cleaner and deodorizer. Filed Feb. 26, 1945 by International Chemical Co., Chicago. Claims use since Jan., 1925.

NASAN — This in upper case, extra bold, black letters for liquid soap. Filed Feb. 26, 1945 by International Chemical Co., Chicago. Claims use since July 1, 1917.

LYEFECTANT — This in upper case, extra bold black letters for germicide, bactericide, disinfectant, parasiticide, dentifrice, dry cleaner, insect repellent, insecticide, fungicide and larvacide. Filed Nov. 10, 1944 by Lehn & Fink Producer Corp., Bloomfield, N. J. Claims use since Aug. 12, 1944.

CHOPINESQUE—This in upper case, extra bold letters for bubble bath and shampoo. Filed Feb. 20, 1945 by



## Synthetic floral oils . . .

PRESENT reduced supplies of natural floral essences emphasize the value of high quality substitutes. Synthetic floral essences can be used to replace the natural oils with full satisfaction and marked success in numerous products,—toilet soaps, shampoos, shaving creams, powders, creams, and many others.

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Toronto Office 119 Adelaide St., W. New York Office 601 West 26th St.

Montreal Office
135 Commissioners St., W.

Leonard Friedberg, New York. Claims use since Jan. 10, 1945.

VAPEX — This in upper case, extra bold, black, over-size letters for carbon and soot remover. Filed Mar. 5, 1945 by Vapex Soot Destroyer, St. Bernard, Cincinnati, O. Claims use since Feb. 26, 1945.

WILSONOL—This in upper case, pen letters for insecticides. Filed Mar. 7, 1945 by Andrew Wilson, Inc., Springfield, N. J. Claims use since Dec. 3, 1943.

B-29—This in upper case, bold letters above the drawing of a four-engined bomber pursuing the fanciful drawing of an insect for insecticide. Filed Apr. 3, 1945 by Dallas Chemical Sales Co., Buffalo, N. Y. Claims use since Jan. 11, 1945.

Nax—This in upper case, extra bold, black over-size letters for floor war. Filed Feb. 26, 1945 by International Chemical Co., Chicago. Claims use since Jan. 1, 1936.

Q & E—This in upper case, bold, black letters for furniture and floor wax. Filed Feb. 26, 1945 by International Chemical Co., Chicago. Claims use since July 1, 1928.

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#### Trade Marks Granted

413,521. Fur rug cleaner. Filed by Polarine, Inc., New York, Nov. 18, 1944. Serial No. 476,640. Published Feb. 9, 1945. Class 4.

413,527. Liquid soap. Filed by Carbisulphoil Co., Dallas, Nov. 25, 1945. Serial No. 476,856. Published Feb. 6, 1945. Class 4.

413,528. Cleaner for toilet bowls, etc. Filed by Sani-Toil Laboratories, Joplin, Mo., Nov. 27, 1944. Serial No. 476,929. Published Feb. 6, 1945. Class 4.

413,532. Liquid cleaner for rugs, carpets, upholstery and fabrics. Filed by Ralph G. Waner, Kansas City, Mo., Dec. 1, 1944. Serial No. 477,-131. Published Feb. 13, 1945. Class 4.

413,537. General purpose cleanser. Filed by Sutol Soap & Chemical Co., Philadelphia, Oct. 23, 1944. Serial No. 475,631. Published Feb. 29, 1945. Class 4.

413,574. Emulsion wax-type product in paste form for waxing various floor coverings. Filed by Diversey Corp., Chicago, Oct. 21, 1944. Serial No. 475,560. Published Feb. 13, 1945. Class 16.

413,580. Floor wax remover and rubber floor burn remover. Filed by Nu-Ball Manufacturing and Research Laboratories, Des Moines, July 31, 1944. Serial No. 472,892. Published Feb. 13, 1945. Class 4.

413,587. Insecticides and fungicides. Filed by Stauffer Chemical Corp., San Francisco, Aug. 21, 1944. Serial No. 473,488. Published Feb. 13, 1945. Class 6.

413,595. Insecticides. Filed by Kentucky Color & Chemical Co., Louisville, Sept. 16, 1944. Serial No. 474,-286. Published Feb. 13, 1945. Class 6.

413,598. Ouricury wax for use in the manufacture of floor, furniture and automobile polish. Filed by Smith & Nichols, Inc., New York, Dec. 24, 1942. Serial No. 457,593. Published Feb. 6, 1945. Class 16.

413,603. Multipurpose cleaner. Filed by Samae Products Co., Newark, N. J., Oct. 15, 1943. Serial No. 464,189. Published Feb. 13, 1945. Class 4.

413,604. Deodorizing solution for masking household odors. Filed by McKim Dental Service, Port Chester, N. Y., Oct. 30, 1943. Serial No. 464,542. Published Dec. 5, 1944. Class 6.

413,620. Solvent used for removing scale deposited from water. Filed by Skasol Corp., Webster Groves, Mo., June 5, 1944. Serial No. 470,928. Published Sept. 5, 1944. Class 6.

413,623. Fur cleaning chemicals. Filed by Paul Simon & Co., New York, July 1, 1944. Serial No. 471,884. Published Feb. 13, 1945. Class 4.

413,626. Silver polish. Filed by Walter G. Legge, New York, July 20, 1944. Serial No. 472,427. Published Feb. 13, 1945. Class 4.

413,660. Cleanser for cleaning metal, wood, etc. Filed by Umberto Plebani, New Rochelle, N. Y., Aug. 17, 1943. Serial No. 462,801. Published Feb. 20, 1945. Class 4.

413,663. Fabric spot remover and cleaner. Filed by JNT Mfg. Co., New York, Dec. 20, 1943. Serial No. 466,164. Published July 11, 1944. Class 4. 413,677. Furniture polish. Filed by Philco Corp., Philadelphia, Aug. 9, 1944. Serial No. 473,115. Published Feb. 20, 1945. Class 16.

413,686. Bactericidal detergents. Filed by Emulsol Corp., Chicago, Oct. 4, 1944. Serial No. 474,889. Published Dec. 20, 1944. Class 4.

413,690. Polish for metals, glass, plastic materials, etc. Filed by Strausser Laboratories, Akron, O., Oct. 12, 1944. Serial No. 475,284. Published Feb. 20, 1945. Class 4.

413,700. Cleansing cream for cleaning and removing oil, grime and grease. Filed by Martin J. Taub, New York, Nov. 3, 1944. Serial No. 476,-086. Published Feb. 20, 1945. Class 4.

413,703. Soap. Filed by Procter & Gamble Co., Cincinnati, Nov. 11, 1944. Serial No. 476,373. Published Feb. 20, 1944. Class 4.

413,704. Polishing wax in liquid and paste form for floors, automobiles, etc. Filed by J. L. Prescott, Passaic, N. J., Nov. 16, 1944. Serial No. 476,527. Published Feb. 20, 1945. Class 16.

413,705. Liquid wax for floors, floor coverings, furniture, etc. Filed by Kote-O-Gold, Ozone Park, N. Y., Nov. 17, 1944. Serial No. 476,558. Published Feb. 27, 1944. Class 16.

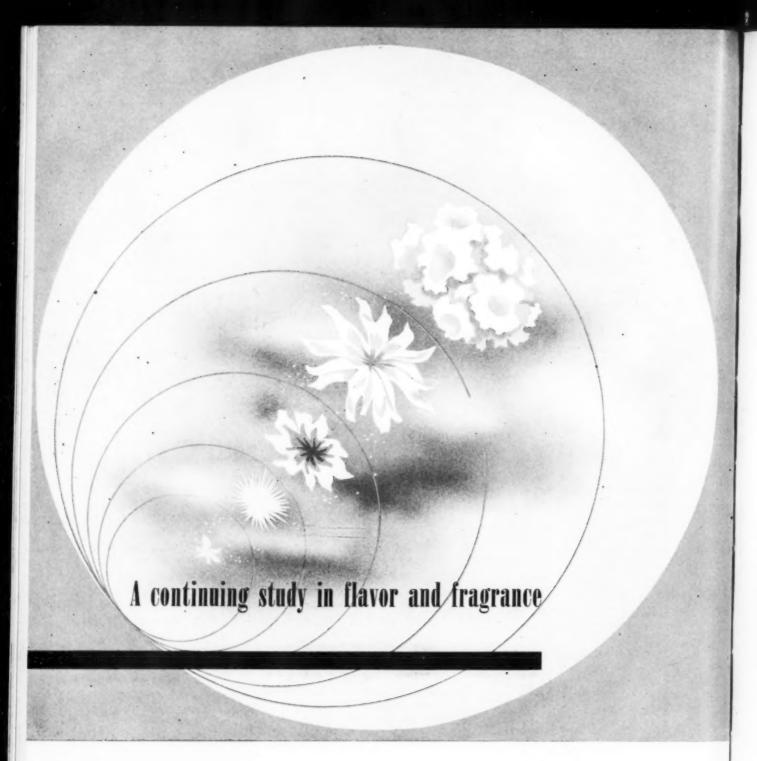
413,719. Hand soap. Filed by House of Tre-Jur, Inc., New York, Dec. 6, 1944. Serial No. 477,273. Published Feb. 20, 1945. Class 4.

413,804. Fungicidal composition for therapeutic use. Filed by Wallace & Tiernan Products, Inc., Belleville, N. J., July 15, 1944. Serial No. 472,312. Published Mar. 6, 1945. Class 6.

413,827. Rust and corrosion preventive oils. Filed by Shell Oil Co., San Francisco, Oct. 17, 1944. Serial No. 475,398. Published Mar. 6, 1945. Class 15.

413,829. Fruit fumigant. Filed by Snowden Chemical Co., Modesto, Calif., Oct. 17, 1944. Serial No. 475,-400. Published Feb. 27, 1945. Class 6.

413,836. Chemical preparation for destroying kitchen odors. Filed by A-K-O Co., Elizabeth, N. J., Oct. 30, 1944. Serial No. 475,830. Published Feb. 27, 1945. Class 6.



The creation of new scents and flavors is a living, growing art—a constant challenge to the skill and imagination of the blender. To give him all possible assistance, it is the aim of the chemical manufacturer to develop and produce a steady flow of new and basic materials. 

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THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN New York, Boston, Philadelphia, Washington, Cleveland, Dotrol? Chicago, St. Leuis, Houston, San Francisco, Los Angoles, Seattle

Synthetic Aromatic Chemicals



CHEMICALS INDISPENSABLE

# RAW MATERIAL MARKETS

As of June 26, 1945

ONG range prospects for the fats and oils situation are hopeful. But for the present and the very immediate future the situation from all indications, will continue to be difficult. Estimates are now being advanced that no major improvement in the domestic supply situation for fats and oils is likely until the late spring or summer of 1946. At least that's the way the Fats and Oils Situation, published by the U. S. Department of Agriculture, sizes up the present plight of the soap maker's basic raw material. Relief, when it does come, will come mainly from two directions: lard stocks and copra imports. A heavy lard crop was one of the reasons for the big supply of fats and oils in 1944, while coconut oil which within a year at most

should be available in substantial volume, will come as welcome relief to the soaper.

What Immediate Future Holds

Between the present and the summer of 1946 it is believed likely that there will be a strong demand to import fats, oils and oilseeds into Europe. As might be expected, the final year of the war in Europe has had a devastating effect on agriculture. As a result, the smallest production of food since the war began there is anticipated during the present year. According to the Fats and Oils Situation, "tentative international allocations call for the shipment of substantial quantities of fats and oils out of world supplies to continental Europe, excluding Russia, in 1945." However, on account of the shortage of fats and oils

generally throughout the world, with the exception of Japanese occupied territory, shipments to Europe will probably be less than half of the 4.5 billion pound pre-war average.

A current domestic development, almost in the nature of a sidelight, is the announcement by the War Food Administration, early in June, of an offer to sell to soap manufacturers in the Midwest and Northeast regions 431 drums of lard, totaling approximately 176,214 pounds. The lard was damaged in the warehouse where it had been stored when the warehouse caught fire, thus making it unfit for human consumption. The WFA announced that the damaged lard was to be used only in the manufacture of non-food products and that it must be denatured before use. A special ceil-



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ing price of 11½ cents a pound, f.o.b. cars at Greencastle, Pa., was established. Bids were to have been received by the War Food Administration in Washington by June 12, 1945.

Stocks of lard in both U. S. Cold Storage Holdings and in Chicago rose slightly for the month of April, as compared with the previous month, for the first time in a number of months. U. S. Cold Storage Holdings on May 1, 1945 were \$3,040,000 pounds as compared with 466,784,000 pounds on May 1, 1944 and 49,728,000 pounds on Apr. 1, 1945. Production of Federally inspected lard dropped in April, as compared with March. Domestic consumption and exports for the month of April were also lower than in the previous month, which production and consumption had shown an increase over February. There were 93,622,000 pounds of lard produced in April, as against 100,179,000 pounds in March and 91,813,000 pounds in February.

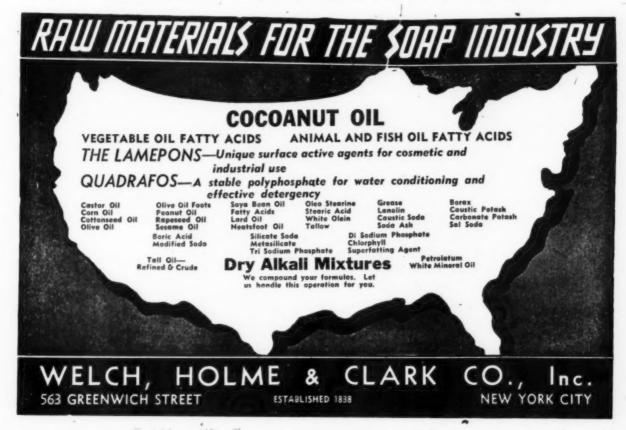
The overall fats and oils picture for 1945 indicates that fats and oils for use in the manufacture of civilian soap will be about 10 to 15 per cent less than in 1944, or about the same as the 1935-39 average.

The Office of Price Administration stated on June 19, that ceilings on sales of imported fats and oils to industrial users will remain "frozen" at Oct. 1, 1941 levels.

In another OPA action during the month it was announced that present ceiling prices for carnauba wax would be continued in effect. This step was outlined in a letter to the chairman of the OPA's Industry Advisory Committee of Vegetable Wax Importers, in which it was stated that there is no justification for removal of either the domestic resale ceilings or the ceilings on purchases of this commodity abroad. Established ceilings are two to three times peacetime levels and the wax is not essential to the war effort, the letter declared. The Industry Advisory Committee at a meeting June 6, voted unanimously that, if license and quota restrictions could not be restored on carnauba wax imports, OPA should remove the ceiling prices on both purchases abroad and domestic

resales. As an alternative, a majority of the committee voted that ceilings be removed from foreign purchases. A majority of the committee felt however, that if all price controls could not be removed, the present ceilings should be continued in effect to protect importers whose principal business is buying and selling waxes. The WPB has announced that license and quota restrictions cannot be reapplied on carnauba wax imports by putting such imports under WPB Order M-63.

With few minor exceptions tightness continues to dominate the essential oil picture. One of the few exceptions was the arrival during the past month of a quantity of Italian bergamot oil. The quantity was said to have been 110,000 pounds, and was sold even before it was cleared. Although some lavender oil came in during the month, it was withheld to meet past needs. The essential oils situation in France, where a goodly quantity of perfuming materials is known to exist, is still snarled up by the rate of exchange. Some oils are said to be coming in from French colonies.



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# PRODUCTION SECTION

## Cracking of Toilet Soaps

THE various causes which have been assigned to the cracking of toilet soaps may be put into three classifications: (1) The presence of added ingredients, as impurities or even as medicaments, (2) mechanical difficulties, and (3) improper chemical composition.

The salt content does not seem to be a primary factor, since a number of reputable brands with a salt content not exceeding 0.25 per cent have been found to crack, while soaps made in India containing several per cent of salt failed to crack. The effect of added medicaments or preservatives is best studied by carrying out small-scale experiments prior to production of the soap.

As to operational difficulties, the modern procedure of drying by chilling the soap on rollers and then passing it through a heated chamber on bands appears to offer a smaller margin of safety than the older method of cooling in frames and then chipping and drying. However, by careful manipulation it is possible to avoid uneven drying. The plodder must not be run at too high a speed or the outside of the plodded bar may emerge more slowly than the inner core. Sometimes the plodder is allowed to stand idle with water running in the cooling jacket. This results in too low a temperature with the risk of obtaining soap wtih a soft warm skin and a cold hard core. Cakes of good appearance may be stamped from such soap but the result is a fracture of the core which does not become apparent until the soap is in use. Sometimes cracking in the soap bar from the plodder takes place because the nozzle is too cold.

Another cause for cracking in soap is uneven temperature during the final processes. Working with modern equipment involves less risk than formerly. Where the chips are delivered directly from the mill to the plodder, there is no cause for temperature changes to spoil the texture of the scap, but where travelling belts are used, this risk is very much increased unless the necessary precautions are taken, such as keeping the general room temperature high. The temperature of the ribbons entering the plodder should not be allowed to fall below 28°C. (82°F.), and all of the plant should be kept free from draughts and at summer temperature.

Possibly the correct balancing of the fat charge is the most important factor responsible for cracking. Too high a titre must be avoided in the fat charge.

#### **Experimental Results**

In order to study the effect of composition, sodium soaps were prepared of the following compositions: Per Cent

	P	27	6
1.	. Sesame oil		
2.	Olive oil		
3.	Palm oil		
4.	. Peanut oil		
5.	Coconut oil		
6.	Mahuwa oil		
7.	Mutton tallow		
8.	Mahuwa oil	7	0
	Sesame oil	2	0
	Coconut oil	1	0
9.	Mutton tallow	6	5
	Olive oil		
	Coconut oil		
10.	Mutton tallow		
	Palm oil		
	Sesame oil		
	Coconut oil		
11.	Mahuwa oil		
	Palm oil		
	Olive oil		
	Sesame oil		
	Coconut oil		
12.	Hydrogenated peanut oil		
	Sesame oil		
1	Coconut oil	10	0

13.	Mutton	tallov	v								.40
	Lard										.25
	Cottonse										
	Sesame	oil .									.10
	Coconut	oil .									.10

Each fat charge was saponified with the necessary amount of alkali, taking all the precautions, by cold, semiboiled and settled processes. Coconut oil (No. 5) was not treated by the settled process. The total number of soaps prepared was 38. The moisture content of the fresh soaps was 20-27.5 per cent. The salt content of the settled soaps was 0.06-0.15 per cent.

One set of equal-sized bars of the experimental soaps was kept for 700 days in a special chamber free from dust but allowing free contact with air. The minimum and maximum temperatures during this period were 18°C. (65°F.) and 37°C. (99°F.). At the end of the period the moisture content had decreased to 6-8 per cent, with consequent increase in the percentage of salt. No cracks appeared in any of the exposed cakes. The cakes were then taken individually and washed out until a very thin piece of each was left. No cracks were found after this treatment. Another set of cakes of the original 38 scaps was freshly made and washed down by ru' bing with the hands. No cracks appeared in these.

The conclusion drawn was that none of these soaps of various compositions made by the three different processes but without the aid of the various operations necessary for toilet-soap manufacture by machines, exhibit any tendency to crack.

The above soaps were then tep rately chipped, milled after the neces-

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sary drying, fed into the plodder, cut into cakes and finally stamped. This third set of experiments was made with a fresh batch of the original 38 soaps. All of the machines employed were of the best make and latest design with the up-to-date improvements and proper arrangements for the control of temperature and mechanical pressure. The percentage of moisture in the soaps was about 8-12 per cent. The results are shown in the accompanying table.

They indicate that in spite of taking all precautions and using the most modern machines, success is not guaranteed in making toilet soaps free from cracking. A fact to be noted is the complete absence of cracking in good transparent soaps, which are generally made by a process similar to the semiboiled method.

Experiments similar to the above were tried but with 15-35 per cent of the alkali replaced by caustic potash, all other factors remaining the same. The change in alkali decreased to a great extent the tendency of the soap cakes to crack.

The soaps described in the table were exposed to the atmosphere for 700 days. Cracks already present suddenly began increasing in size on the arrival of the winter season. At the beginning of the second winter the cracks increased still further. Cracking was least in the soaps of palm and peanut oils and was very prominent in soaps containing a high percentage of hard fats like mutton tallow, mahuwa oil and lard.

#### Conclusions

The cracking of soaps has its origin in the innate tendency of individual constituent fatty-acid salts to crystallize. Soaps made out of oil stock high in noncrystallizing ingredients such as liquid glycerides of unsaturated character, do not crack at all. This class of oils is represented by sesame, olive, etc. Soaps made out of stock composed of a properly balanced proportion of the crystallizable and noncrystallizable ingredients, show very little cracking. Palm and peanut oils represent this class. Soaps made of stock high in crystallizable ingredients exhibit a strong tendency to crack.

Kind of Soap	Method of Preparation	Observations
1. Sesame	Cold processed Semiboiled Settled	No cracking even on keeping and after use No cracking even on keeping and after use No cracking even on keeping and after use
2. Olive	Cold processed Semiboiled Settled	No cracking even on keeping and after use No cracking even on keeping and after use No cracking even on keeping and after use
3. Palm	Cold processed Semiboiled Settled	Very few and small cracks on keeping Very few and small cracks on keeping Very few and small cracks on keeping
4. Peanut	Cold processed Semiboiled Settled	Very few and large cracks on keeping Very few and large cracks on keeping Very few and large cracks on keeping
5. Coconut	Cold processed Semiboiled	No cracking even on keeping Small cracks immediately after stamping
6. Mahuwa	Cold processed Semiboiled Settled	Cracks appeared within a few hours of stamping Cracks appeared within a few hours of stamping Lengthwise cracks immediately on stamping
7. Mutton tallow	Cold processed Semiboiled Settled	Lengthwise cracks immediately on stamping Lengthwise cracks immediately on stamping Larger cracks immediately on stamping
8. Mixture No. 8	Cold processed Semiboiled Settled	Larger cracks immediately on stamping Larger cracks immediately on stamping Larger cracks immediately on stamping
9. Mixture No. 9	Cold processed Semiboiled Settled	Very large cracks immediately on stamping Very large cracks immediately on stamping Very large cracks immediately on stamping
10. Mixture No. 10	Cold processed Semiboiled Settled	Very large cracks immediately on stamping Very large cracks immediately on stamping Still larger cracks immediately on stamping
11. Mixture No. 11	Cold processed Semiboiled Settled	Less cracking than in No. 8 Less cracking than in No. 8 Less cracking than in No. 8
12. Mixture No. 12	Cold processed Semiboiled Settled	Very brittle with great tendency to crack Very brittle with great tendency to crack Very brittle with great tendency to crack
13. Mixture No. 13	Cold processed Semiboiled Settled	Excessive cracking Excessive cracking Excessive cracking

The difference between framed soap and mechanically processed soap is explained on the basis of the crystalline ingredients being enveloped by the noncrystalline ingredients, and the latter acting more or less as a solvent for the former. This is considered to be a "natural" order of distribution. In milled soaps distribution is more thorough and crystals begin separating at all points; the lower water content aids this. Low temperatures also promote crystallization.

Noncracking soaps can be produced from hard oil stock only by the cold process. Cracking can be minimized to a great extent by milling in a little white potash soap, also by adding suitable binding agents such as lanolin. The constituents of the soap also should be balanced so as to allow a high enough proportion of liquid soaps. Sadgopal. *Indian Soap J.*, April-June, 1944.

#### Small-Scale Spray Dryer

The new Bowen Table Laboratory Spray Dryer made by Bowen Research Corp., Garwood, N. J., is so compact that it will stand on a 3 x 6 foot table. It contains all of the elements for drying a quart or two of practically any aqueous solution or slurry, to powder form in a few minutes. Operation consists essentially in feeding liquids or slurries by gravity or pressure into an atomizer which is whirled at 50,000 r.p.m. by an inbuilt air turbine in the top of a drying chamber. Countercurrents of air heated by a small inbuilt gas furnace, force the atomized material into a whirling vortex wherein the drying takes place. The resultant dry powder passes into a conical dust collector and is deposited in a convenient glass receptacle. The equipment is an engineered reduction of a large commercial spray drier.

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# PRODUCTION

By DR. E. G. THOMSSEN, PH.D.

HE ability to pull together is not a common characteristic. The tendency too often is to gain personal advantage and advancement by handicapping another or even injuring the company or organization by which one is employed. To obtain complete harmony among employers is one of the big problems of any executive, of which "chiefs" in the production end of a business are not the least. In larger plants this detail is so important that specially trained persons are delegated to handle labor relations and personnel matters. Smaller plants, however, cannot afford this expense so the problem is usually thrown into the lap of the production boss. In many cases this detail is just another headache, as it requires tact and patience, as well as a good groundwork in psychology or sociology, to meet properly the many problems that arise in this respect.

While many employers at first did not like the principle of collective bargaining and fought it as best they could, it is a constructive step in the direction of harmony. Wages have always been a bone of contention between employee and employer. Seniority has been a sore point. Overtime pay, working hours, factory conditions, differences as to details in plant operations, vacations with pay for office workers but not for factory workers, leaves of absence, rest periods, methods of settling minor disputes or grievances, reasons for discharging a worker, transfer of men from one department to another and similar incidents have



aggravated strife or discord in innumerable cases. Fortunately for the boss and the worker, these are now pretty thoroughly covered in union contracts and no longer cause as much ill feeling as in the past. It is also to be observed that plants in which these matters were amiably handled before the passage of the Wagner Act are the very ones which the unions find it most difficult to organize.

Recently I was driving along with the production manager of a large manufacturing plant, which makes items of interest to us. It also manufactures products in a highly competitive field. The factory operates without any union, company or regular trade union type. Attempts have been made to organize employees on several occasions but the employees have voted against unions when the

labor board held an election. I was rather amazed at this and inquired as to the reason. The answer was that the company had always met their employees more than half way and they always know they will get a square deal. Those words were quite general and had not kept unions out of other plants. A further search indicated there was more to the story than just this. The true facts were that this man is an unusual one in that over a period of years he has built into his organization the idea that each workman or woman is a member of a large family. There is an unusual, mutual interest in the welfare of each other. If anyone is disgruntled or has ill feeling, the cause is determined immediately and the condition promptly corrected. Just an example or two will illustrate this:

One employee began to crab about everything and stir up trouble. My friend called him into his office for a talk. It turned out the employee was preved because a few years previous he had been injured in the plant and the insurance adjuster under the Compensation Act did not allow him as big a payment as he considered he deserved. He was blaming the company for this. The matter was promptly adjusted by paying him a few dollars more than he claimed he was entitled to "as interest" and this man later became one of the best and most loyal straw bosses in the organization. In another case, an employee went out of his way to be offensive and did enough damage to warrant dismissal. He was treated kindly and courteously nevertheless. Eventually it was found he disliked his job as a packer and wanted to be a watchman where he could have some degree of authority over men. At the first opportunity he was appointed a watchman. He became a happy, valuable employee. Many similar incidents could be cited when some slight peeve upon the part of an employee causes much disorder and dissatisfaction in a plant.

While factory employee and employer relations are often strained, it is even worse when those in higher positions, like foremen, become disorganizers. This is by no means a rare occurrence. Usually it is envy that breeds this condition. The desire for

### **DRYMET**

(Sodium Metasilicate—Anhydrous)

### **CRYSTAMET**

(Sodium Metasilicate—Pentahydra?a)

# CONCEA DETERGENT SILICATES

## DRYSEQ\*

(Sodium Sesquisilicate — Technically Anhydrous Equivalent)

### DRYORTH\*

(Sodium Orthosilicate—Technically Anhydrous) REGULAR GRIND DUSTLESS

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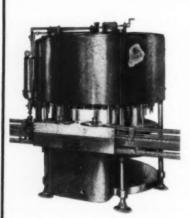
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DETERGENT CO.

## For Filling SODIUM HYPOCHLORITES



U. S. Rotary Vacuum Filler

**U.S.** ROTARY VACUUM FILLERS are being used most successfully and efficiently in filling liquid Bleaches, Disinfectants, Germicides, etc., into containers.

They are a high speed filling machine for handling free flowing liquids — light, heavy or foamy. Tubes and contact parts are built of materials that prevent contamination and resist corrosive action.

Speeds are variable and range from 40 to 130 containers per minute, depending upon the number of tubes on the machine and size of containers being filled. U. S. Rotary Fillers are furnished in three sizes.

We are designers and builders of hand operated, semiautomatic, fully automatic and high speed container Bottling and Packaging Equipment.

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M ...... ..

more authority and the urge to possess more wealth leads men in supervisory jobs to do some unfortunate things. To deal with these conditions is more difficult than with the ordinary factory employee. It has been found that immediate adjustments of such difficulties at a conference with all parties concerned is one way of handling this problem effectively. Another method is to urge the malcontents never to be satisfied in the position in which they find themselves, but to seek advancement elsewhere. They will usually find out that nobody else has as good a job for them as they already have or that if they can get another job, they will not have the security and advantages of their present one. This discovery in most cases quiets them down a lot.

Harmony in plant operation is a very desirable attainment, but when disharmony breaks out it is usually "shushed up" because we do not like to admit that it exists or do not like to discuss it. There is often a vain hope that the situation will heal with time. This is very often not the case, and the problem grows worse unless corrected.

#### Controlled Drying

For years Proctor & Schwartz, Inc., Philadelphia, have been leaders in the dryer field. This is especially true in the drying of soap where their equipment is used in the great majority of plants. Our experience with Proctor dryers extends over many years and during that time they have made numerous improvements that have resulted to the advantage of both soapers and soap consumers. Few of us remember the days when soap was framed, chipped and dryed on trays followed by the old type of soap dryers with the small, inefficient rolls. The later soap dryers with the large roll and other improvements have removed from our memory the ordeal of drying soap twenty-five or more years ago. Proctor & Schwartz call attention, in a folder sent us, to the necessity of taking time out now to plan for conversion to an improved postwar soap flake dryer for increased profits. This dryer assures accurate control of the drying as well as flake thickness by easy adjustment of the space between the large and small rolls. Perfect ribbons and the speed of

roll are controlled by variable speed transmission. The temperature of the feed roll and soap chilling roll may be regulated by hand valves. Thermometers have been installed on the chilling roll inlet and outlets of this roll and of the feed rolls. Other improved features are the control of the width of the soap ribbons by spacing needle markers, regulation of the carrying in the conveyor to reduce crimping of ribbons, variations of dryer conveyor speed to fit time of drying for various types of soaps and the installation of automatic temperature controls to maintain desired temperatures. During these days when soapers must face difficult conditions due to the shortage of fats and oils and consequent necessity of altering the kettle charges or formulae to meet this shortage, the drying of soap is not as simple as in normal times. Improvements such as outlined go a long way toward their solution and Proctor & Schwartz are to be commended for them.

#### Surface Active Agent

It is hardly necessary for us to dwell upon the numerous applications of wetting agents or synthetic detergents, more properly termed surface active agents. Their use has so greatly expanded through war time conditions that the demand has increased to the extent that severe rationing under WPB Order M-300, Schedule 44 became necessary.

National Aniline & Chemical Co., New York, recently sent us their booklet on "Nacconol N R" which should be a part of the library of plant men who use this type of product. The information regarding this chemical is given in simple technical language. The bulletin is divided into six sections setting forth "Nacconol N R's" properties, uses in commercial processing, uses in cleaning and other compounds, uses for institutional cleaning, an appendix on other "Nacconols" and a bibliography. This information is concise and yet it quite thoroughly covers the subject. Several illustrations are included which more vividly present the wetting agents' properties than the written word. While some of the information has to do with industries in which our readers are not concerned,

we recommend that those production men in our industry who do not have a copy of this book on file, obtain a copy.

#### Turbine and Propeller Pumps

The name Fairbanks, Morse & Company, requires no introduction to anyone with even a limited experience with machinery. Their line is so varied that it is practically mandatory to use some piece of machinery made by them. Their advertising department at Pomona, California, has just released two bulletins describing their figure 6920 oil lubricated turbine pumps with enclosed impellers (Publication ABQ 400.1) and Niagara propeller pumps figure 6310 (Publication ABQ 500.1).

Both of these pumps are used mainly as well pumps. The turbine type pumps cover a wide range of capacities and heads in sizes from 4 in. to 20 in. and capacities from 35 gallons per minute to 4,000 G.P.M. They are fitted with highly efficient enclosed impellers for either oil or water lubrication depending upon service conditions. The heads are of various types come with belt drives and are also driven by direct connected motors, Diesel or gasoline engines and steam turbine heads. These pumps are scientifically designed and precision built of the finest materials available. The propeller pumps are used for large capacity and low head pumping service. In industrial plants they find use as circulating pumps in many processes. They are driven either by belts or motors. The design is for operation with the propeller submerged, so that pumping may be started instantly without the necessity of priming and the delay occasioned thereby. These pumps are offered in sizes from 8 in. up to 48 in., in capacities of from 1250 to 60,000 G.P.M. and in heads up to 40 ft. If pumps of larger capacities and higher heads are required, these may readily be built to order.

Those who require pumps of these types may secure the special folders mentioned above, which give full information, by inquiring at Pomona or one of the nearby branches. These are located in all the principal cities of this country and the world.

#### Soap from Black Liquor

Crude black-liquor soap which may be used as the starting material is preferably treated for the removal of impurities such as lignins and sulfur compounds by dissolving and reprecipitating the soaps from an alkaline salt solution. The purified black-liquor soap may then be acidified with excess sulfuric acid and the fatty material separated as tall oil containing rosin as well as fatty acids. The tall oil is dissolved in isoamyl alcohol and partly neutralized with caustic soda, in an amount sufficient to combine with the fatty acids as soaps, while leaving the rosin acids free. The two may be separated by dehydrating the mixture, for example, by boiling and refluxing the solvent-water azeotrope over a water trap, until the solution contains less than 1.5 per cent by volume of removable water.

Upon slow cooling from the dehydrating temperature of 120°C, to about 20" over 3-5 hours, the salts or soaps of the fatty acids are precipitated, while the rosin acids remain dissolved in the mother liquor. Certain modifications in this process are admissible, such as an azeotropic distillation instead of the other dehydration method, without change in the resulting product. The latter, a coarsely granular filter cake, may be admixed with extenders such as soda ash and then subjected to vacuum distillation at 22-5 inches of mercury and a temperature below 80°C, to recover amyl alcohol. It is then treated in the usual way, such as blowing through a filter press, preferably in the presence of nitrogen, to prevent darkening of the product. The resulting soap is a free-flowing, dry powder sufficiently free from rosin to a'low drying without melting, gumming and sintering. A. G. Houpt, to Am. Cyanamid Co. U. S. Patent No. 2,366,334.

#### Purification of Fatty Acids

To free a fatty-acid stock from undesirable components boiling higher and lower than the fatty acid desired, distil the stock under reduced pressure in such a manner as to remove the lower-boiling impurities. Withdraw the stock from the fractionating zone and distil it at a temperature and pressure lower than used in the first step and thus distil over the desired fatty acid, leaving the higher-boiling impurities. J. F. Murphy, to Lever Brothers Co. U. S. Patent No. 2,361,-411.

#### Laundering Curtains

Curtains sometimes fail to wash satisfactorily because of deterioration from atmospheric aging and sunlight. The customer tries to make curtains last longer due to present shortages, and the laundryman faces a difficult washing problem. Rules to be observed in handling curtains are as follows:

- 1. Net all curtains, preferably in small nets, and pin the net closely so that very little strain will be placed on the curtain fabric while it is being washed. This is better than crowding several curtains into a large net.
- 2. Wash curtains like woolens, that is, with a high water level and a heavy suds built with a low titre neutral soap. Curtain fabrics release the soil quite readily because of their open weave, so that there is no need for rigorous washing treatment.
- 3. High temperatures and soap solutions of a high alkalinity should be avoided since cotton, linen and rayon fabrics which have undergone deterioration tend to decompose much more rapidly in strongly alkaline solutions and at high temperatures.

Some people prefer to have curtains dry cleaned but this may be instrumental in shortening the life of the curtain. This follows from the fact that curtains used in industrial districts may pick up traces of sulfur dioxide, which becomes converted to sulfuric acid in the fabric. Dry cleaning does not remove the acid so formed, while wet cleaning does. Curtains have been known to contain enough sulfuric acid formed in this manner, to turn blue litmus red. In such cases the acid left in the fabric damages the curtain when it is subjected to heat in finishing. C. H. Bayley, Bull. Canadian Research Inst. of Launderers and Cleaners, April, 1945.

#### Soap by Alcoholysis

A glyceride is treated with a substantially anhydrous alcohol such as methanol or ethyl alcohol, in a small excess in the presence of dry alkali hydroxide in an amount slightly above that necessary to neutralize the acidity of the glycerine. The soaps formed are decomposed with an acid such as acetic or hydrochloric. The alkyl esters formed are separated from the glycerol and are fractionally distilled. The mixture of higher esters is treated with an alkali hydroxide, preferably in the absence of water, to form soaps.

The amount of alcohol required for the liberation of the glycerol can be reduced substantially by working in steps. Amounts of alcohol from 1.10 to 1.75 equivalents represent a practical range. If a previously refined neutral oil is used, the amount of alkali required is only that necessary to maintain alkalinity to Clayton yellow during the alcoholysis. With anhydrous caustic soda this is 0.1 to 0.5 per cent by weight based on the oil.

At ordinary temperatures and with dry neutral materials, the glycerol separates almost immediately. Higher temperatures increase the speed of this reaction so that it is practicable to run it in a continuous process. Modifications necessary in the application of the process to an unrefined oil, and instructions on spray-drying of the soap are given. The process does not require high temperatures or pressure, and it permits the use of glycerides for making hard soap that hitherto were used only for soft soap. G. B. Bradshaw and W. C. Meuly, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,360,844.

#### Melting Point Studies

Transition points are reported for a series of unsymmetrical monooleyl-disaturated triglycerides and a series of unsymmetrical monosaturated dioleins. The results of thermometric measurements on a series of saturated 2-monoglycerides are also reported. F. Daubert and T. H. Clarke. Oil & Soap 22, 113-15 (1945).

Limited Quantities of

**Prepares Pectic Compounds** of Greater Gelling Power

According to claims made in a recently

granted patent, pectinic acid of superior vis-

cosity, and therefore superior gelling power, can be obtained in far shorter time and under

excellent control, by using enzyme pectase.

Following adjustment of the methoxy content

of apple pommace extract to the desired per-cent, the extract was adjusted to pH 6.5,

tomato juice serum added, and as acidity developed, the pH was maintained at approxi-

mately 6.5 with sodium hydroxide. After addi-

Gelling powers of pectic compounds in gen-

methoxy groups from pectin largely destroy this aggregation and hence yield products of low gelling power.

for civilian end uses.

**Indalone Available** 

#### **Resin-Plasticizer for Urea and Melamine** Pinch Hits for Alkyds

Aroplaz 1311 Proves Practical Substitute for Certain Scarce Phthalic Alkyd Resins

Favorable reports from coating manufac-turers give evidence that S & W Aroplaz 1311 has proved successful as a substitute resin-plasticizer for use with urea and melamine resins in the formulation of bake-coatings. Introduced not quite a year ago as a replacement for scarce alkyds, this new resin has, after continued observation and testing, shown surprisingly high outdoor durability.

Because urea and melamine resins lack sufficient flexibility and adhesion, they are rarely used alone in baking finishes. Alkyd resins have usually been added to secure these qualities. However, the supply of phthalic anhydride, from which alkyd resins are made, is so scarce that only the very lickest with the secure that only the very lickest and the secure that only the secure t highest military end-use requirements can be met. Moreover, very few resins, other than alkyds having a phthalic content, are compatible with urea and melamine. Those that are compatible usually do not furnish the desired flexibility and adhesion.

#### **High Compatibility**

Although free from any phthalic content, & W Aroplaz 1311 is highly compatible with both urea and melamine resins and, at the same time, imparts required flexibility without inducing excessive softness or lack of resistance. It also works well with nitro-cellulose and is being used as a resin-plastic-izer in lacquer. With practically all raw materials in scarcity and under some kind of government allocation and control, end-uses still control the availability of S & W Aroplaz 1311, but these are of a far less critical nature than those for phthalic alkyd type resins.

#### Specifications

Solution 59-61% Solids (in High Solvency Naphtha) Viscosity (G-H) Acid Value of Plastic Color (G. H. 1933) S-V 25-30

8-10 Wt./gal. at 25°C.

### **Diversification Keynotes** Dodge & Olcott Merger

U.S.I. Management Sees Acquisition of Famous Essential-Oil House Adding Tremendous New Scope to Its Services

In acquiring the assets and business of Dodge & Olcott Company, one of the country's largest essential oil houses, U.S.I. has extended its activities into an-

other important branch of the chemical industry. Dodge & Olcott manufacturers, imports, and distributes a line of products num-bering well in the hundreds. The line includes important new insecticide concentrates, as well as a full range of essential oils, perfume bases, flavor bases, etc.

### As this issue of U.S.I. Chemical News goes to press, limited quantities of Indalone, the insect-repellent which has been usc.J in such large quantities and with such success by the armed forces, are available "D & O" Organization Unchanged

No changes are contemplated in personnel or organizational set-up of Dodge and Olcott. It will continue to operate as a separate company under its present management, which is headed by Francis T. Dodge, President and Charles A. Myers, Valentine H. Fischer, and Charles O. Homan, Vice Presidents.

#### Insecticide Market Looms Large

"D & O" has played a key role in the de-velopment of the much-heralded aerosol "bomb", used so successfully by our Armed Forces to rid tents, buildings and airplanes of mosquitoes and other insects. It was this company which first developed a pyrethrum of sufficient purity to be non-irritating and

(Continued on next page)



The aerosol "bomb" in action. One six inch dispenser contains enough insecticide to end insect life in 150,000 cubic feet of space. The pure pyrethrum extract developed by "D & O" con-tributed much to the success of these bombs.

#### New Cellulose Acetate Process **Promises Improved Plastics**

A New Jersey inventor appears to have found a practical way to take much greater advantage of the high oxidation and moisture resistance of cellulose triacetate than has ever been done in the past. His unique use of low temperatures to make acetates of high acetyl content soluble in acetone, ethyl acecate and other conventional acetate solvents should facilitate the manufacture of a whole range of products with improved chemical.

physical and electrical characteristics.
Cellulose triacetate has long been known to have important advantages over the par-tially acetylated cellulose commonly used in commercial practice. It is more stable to light, oxidation and hydrolysis. It has excel-lent electrical insulation which is less affected

by high humidity. The trouble has always been that it could not be dissolved in ordinary solvents, except chlorinated hydrocarbons whose toxicity and corrosiveness made them impractical. Also, the high melting point of the triacetate, and its lower solubility in plasticizers, required the use of a solvent that could readily be removed.

The new process, on which a patent has just been granted, is founded on the discovery that when the triacetate is maintained in contact with a solvent like acetone at a low temperature (from -10 to -75 C) for a sufficient period, a swelling action occurs. As the swollen gel is warmed to room temperature, it becomes fluid and forms a workable solu-

#### Dodge & Olcott Merger

(Continued from preceding page)

to function properly in the "bomb". It was "D & O" who first put this extract into large-scale production, thus expediting the whole aerosol program.

This and other "D & O" developments will be a simple of the control of the contr

dovetail profitably with the intensified activi-ties of U.S.I. in the insecticide and insectifuge fields. Indalone, the U.S.I. insect repellent which is now rendering yeoman service in the Pacific, is expected to find rapidly increasing use in peacetime consumer products. Further U.S.I. developments in the insecticide field will channel through "D & O" and contribute to their service in the industry.

#### Historic Company

Founded in 1798 by Robert Bach, Dodge & Olcott Company is one of the three oldest companies in the United States. It is also one of the most interesting, for its business is truly "global" in scope, Madagascar, Java, China, Egypt are but a few of the far-flung areas of the world from which its imports come. It imports or processes products - ranging all the way from ambergris to wormwood oil - which are obtained from thirty or more different countries. In finished form, these products are

countries. In hnished form, these products are sold in an equal number of foreign markets.

Old in years, Dodge & Olcott is young in its approach to modern problems. Perhaps the best example of this is the company's ingenuity in providing practical substitutes for certain imported materials that have been cut off by the war. Mr. Dodge, who is directly related to the original founder of the company, typifies the progressive spirit that perhaps, typifies the progressive spirit that perhaps. related to the original founder of the com-pany, typifies the progressive spirit that per-vades the entire organization. It is such pro-gressiveness that has kept "D & O" one of the most respected names in the chemical indus--a name that stands for integrity and high technical proficiency in an extremely complex business.



This new fiber drum, new used by U.S.I. for shipping some of its resin products, has an easy-to-use lever-ring closure which facilitates opening and re-closing.

#### **Tabletting Process Makes Use of Ethanol**

The stability of gelatin solutions containing ethyl alcohol increases with the acidity, reaching a maximum at pH 2.5, according to a recently translated German paper. Solutions of gelatin in alcohol, used in making phenacetin and lactose tablets, exhibited binding capacities equal to common gelatins but with a prolonged dissolving time. Decided advantages were found in tabletting ascorbic acid, citric acid, ephedrine-hydrochloride, basic aluminum acetate and iron lactate and tar-trate. Alcoholic gelatin was also recom-mended for the manufacture of absorbing sugar tablets, but for mixtures of sucrose with cocoa, the aqueous solution is preferred.

#### TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A new wetting agent, said to leave no surface film or streaks and to require no polishing, is offered for use on glass, porcelain or metal. The penetrating effectiveness of this new delergent is attributed to its action in lowering the surface tension of matter adhering to the surface. (No. 953)

USI

To improve adhesion of gummed paper products such as tape, labels and postage stamps, a new additive for the moistening water is offered. It is claimed to produce stronger, more uniform seals, to eliminate curling and to speed the output of sealing machines.

1157 USI

A resin adhesive is announced as the first commercial development solely from furane derivatives. The new adhesive is claimed to bond at room temperature, to require no contact pressure and to be completely resistant to water, alcohol and gasoline.

ISI

(No. 955) USI

Longer-lived pickling baths are promised by the manufacturer of a new acid inhibitor, designed to protect the base metal and confine the action of the acid principally to scale and oxides.

(No. 956)

USI

Termite control, lasting five years, is promised by a manufacturer who says government reports show his product to be highly effective in the termite control field. (No. 957)

A new emulsifying agent, described as being non-toxic and edible, is suggested as a replacement for diglycol laurate in the preparation of pharmaceuticals, cosmetics, foodstuffs, and as a shortening base. USI

Fire-extinguishing foam, made from soy beans, is described as being capable of smothering the toughest petroleum and chemical fires. Five gallons of the product are said to produce 900 gallons of smothering foom in a few seconds.

(Ro. 959)

USI

Flame-resistant plastics, of cellulose acetate, are announced with the statement that they are heat-and-humidity resistant, tough, colorable and may be molded by the injection process. (Rc. 866)

A fire-retardant coating, bone-white but tintable, for use on wood and other combustible materials, is claimed to offer exceptional coverage. One gallon is said to cover 165 sq. ft, with two coats (Me., 661)

USI

Faster varnish production is promised by the processor of a new linseed oil which is claimed to polymerize instantly, thus reducing the cooking time.

(No. 962)

### Gel-Resistant Zeins Yielded by New Process

Present-day methods of extracting zein Present-day methods of extracting zein from corn gluten give a product which, unless specially treated, has a strong tendency to thicken or gel in storage. The reason, according to the inventors of a new process, is that the 80 per cent alcohol solution used extracts undesirable floc-forming proteins along with the zein. Removal of these proteins, as well as unwanted coloring matter and oil has been both difficult and coally. and oil, has been both difficult and costly.

The new process is claimed to markedly reduce the extraction of these impurities by the use of a 40 to 65 per cent solution of ethanol and water.

Another feature of the new process is the treatment of the recovered zein to increase its solubility in various solvents with which it is ultimately to be used. This is accomplished by oxidizing the zein in the extract with an agent such as chlorine,

#### NOUSTRIAL CHEMICALS, US MEDICAL BRANCHES IN ALL PRINCIPAL CITIES ACETIC ESTERS INTERMEDIATES ACETONE ALCOHOLS RESINS OXALIC ESTERS Ethanol (Ethyl Alcohol) PHTHALIC ESTERS ETHERS OTHER ESTERS FEED CONCENTRATES OTHER PRODUCTS \*ANSOLS

### PRODUCTS AND PROCESSES

#### **Brushless Shaving Stick**

A brushless shaving stick is composed of sesame oil 38.75 parts, spermaceti 45, stearin 7.5, tallow soap 1.5, partial polyglycerol fatty-acid esters 4, titanium dioxide 2, and perfume 1.25 parts. R. Thomas and M. Whitham, to Lever Brothers Co. U. S. Patent No. 2,366,759.

#### New Skin Detergent

A synthetic skin detergent has been perfected by Fairchild Brothers & Foster, New York, a subsidiary of Winthrop Chemical Co. It is intended primarily for use by specialized groups of medical men as a replacement for soap. The name is "pHisoderm," and it is produced as a thick fluid cream. It contains no soap, no alkalies, and no perfume or coloring matter. The pH is 5.5, which is about the same as that of the average skin. Technically, the product is a water-miscible emulsion of U. S. P. petrolatum, lanolin, cholesterols and sodium para-ter-octylphenoxy-ethoxy-ethyl ether sulfonate. It may be used in hot or cold water, as well as in soft or hard water, including sea water, and in an acid or alkaline medium. Compared with soap it is said to be more rapid in cleansing action and to require less water for washing and rinsing.

#### Cleanser for Smooth Surfaces

A new wetting agent, "Alconoz," introduced by the Standard Scientific Supply Corp., New York, is said to be an efficient cleanser in hard water and in an acid medium. The solution leaves no surface film or streaks, and requires no toweling or polishing. Simple rinsing leaves a clean surface.

#### Coconut-oil Emulsion

Dry shredded coconut of approximately 100 mesh is treated in a grinder. During this operation the size of the solid particles is gradually reduced while oil contained in them

is being released. The vapors liberated are allowed to escape. This treatment continues until a maximum of oil is released and the solid particles attain the desired size. J. F. McCashen, to RotoCut Corp. U. S. Patent No. 2,361,697.

#### Glass Cleaner

A new product called "Safe-T-Clean" is recommended for cleaning glass, glazed ceramics, mirrors, jewe!ry, and certain plastics. It was developed by Hudson American Corp. of New York to do a critical cleaning job on quartz crystals manufactured for radio and radar. The material is a powder to be mixed into water, Solutions are said to clean quickly, safely and thoroughly. They are harmless to hands, fabrics and equipment.

#### Detergent and Wetting Agent

Fractions rich in alpha-terpineol or other delta-hydroxy methenes are subjected to dehydrogenation at temperatures of 90-110°C. in the presence of a supported paladium catalyst. a! pha-Terpineol melting at 34-5°C. 100 parts, are heated with the catalyst at 96-8°C. with mechanical agitation. The iodine number is obtained periodically. The reaction is conducted for 90 minutes or more. By subjecting pine oil to the treatment outlined, the iodine number of the product was 10. This product is useful as a detergent and a wetting-out agent. A. C. Johnston, to Hercules Powder Co., U. S. Patent No. 2,366,409.

#### New Uses for Synthetics

Of 14 synthetic detergents studied, at least four of the cationic substances were found to be efficient cysticides, the single neutral detergent was somewhat less effective, and the three anionic detergents showed little promise. For the disinfection of drinking water, the cysticidal dosage of the best substances tested was about 30 p.p.m. for contact periods of 10 minutes, and the required dosage was de-

creased to about 10 p.p.m. as the contact period was lengthened to 2 hours. Hydrogen-ion activity appeared to have little influence on the results.

The detergent and disinfecting properties possessed by these newcomers to the field of sanitation suggest the exploration of their possible usefulness for a number of purposes other than water disinfection, including sanitation of eating utensils, safeguarding of shellfish, cleaning and disinfection of water mains, cleansing of water filters, etc. Before new uses can be applied, however, it will be necessary to obtain information on the physiological effects that the synthetic detergents may have on human beings. G. M. Fair, S. L. Chang, M. P. Taylor, and M. A. Wineman. Am. J. Pub. Health 35, 228-32 (1945).

#### Amido Methylol Ethers

New surface-active substances are produced by causing a methylol amide to react with an organic hydroxyl-containing compound of the type ROH, where R carries no watersolubilizing groups. The reaction, as of methylol stearamide with methanol, is carried out at a temperature between 0° and 100°C. in the presence of a catalyst such as phosphorous Trichloride, concentrated sulfuric acid, etc. The reaction may be carried out in an inert diluent. M. Engelmann and J. Pikl, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,361,185.

#### Antioxidants

The antioxidants, nordihydroguaiaretic acid, propyl gallate, benzyl hydroquinone, a!pha-tocopherol, and their synergistic combinations with citric acid, d-isoascorbyl palmitate, and lecithin were tested with the substrates methyl linoleate, methyl oleate, methyl stearate, and the distilled methyl esters of lard. Citric acid showed marked synergism with each antioxidant. The two most effective were the combinations of citric acid with nordihydroquaiaretic acid and with propyl gallate. A. J. Stirton, J. Turer and R. W. Riemenschneider. Oil & Soap 22 81-3 (1945).



# A Leakproof Container that can

be depended upon for safety in shipping

INLAND STEEL CONTAINERS

Container No. 594Q is designed for shipping thin liquids. Unusual strength is provided by the five thickness chime made with the double seaming method of attaching head and bottom. The thinnest of liquids can be safely shipped in this drum type container that stays leakproof even with rough handling. Three styles of openings can be furnished—



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No. 594R SWIYEL SPOUT

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### PATENTS

### Conducted by Lancaster, Allwine & Rommel

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PATENT AND TRADE MARK CAUSES
402 Bowen Building,
Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine & Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,374,446, Metallic Soap-Resin Solutions, patented April 24, 1945 by Ralph E. Madison, Detroit, assignor to Truscon Laboratories, Inc., a corporation of Michigan. The method of manufacturing stable solutions of the class described comprising the steps of forming a slurry of a metallic soap which normally gels in the presence of a hydrocarbon solvent and a hydrocarbon solvent, adding to said slurry while under agitation a gelation inhibitor comprising a saturated aliphatic monohydric alcohol no higher in the class than amyl alcohol followed by a peptizing agent comprising an acid selected from the class consisting of concentrated hydrochloric acid and dilute nitric acid, raising the temperature of the peptized slurry to approximately 140° to 180° F. while maintaining agitation, removing the source of heat from said slurry, and slowly and thoroughly mixing the said heated slurry into a solution of a unsaponifiable, synthetic resin and a solvent compatible with said resin and the metallic soap solvent.

No. 2,374,447, Stable Non-Viscous Metallic Soap Solutions, patented April 24, 1945 by Ralph E. Madison, Detroit, assignor to Truscon Laboratories, Inc., a corporation of Michigan. The method of manufacturing stable non-viscous solutions of the class described comprising the steps of forming a slurry of a metallic soap which will gel in the presence of a hydrocarbon solvent and a hydrocarbon solvent, gelating the said slurry by slowly raising the temperature thereof during agitation to 175° to 205° F., reducing the viscosity of the gel to a syrupy consistency by adding

10 per cent to 100 per cent of a saturated aliphatic monohydric alcohol no higher than amyl alcohol by weight of the metallic soap and adding from 1 per cent to 5 per cent of an acid selected from the class consisting of concentrated hydrochloric acid and dilute nitric acid by weight of the metallic soap to reduce the syrupy liquid to the approximate fluidity of water.

No. 2,374,479, Insecticide, patented April 24, 1945 by Samuel I. Gertler and Herbert L. J. Haller, Washington, D. C., assignors to Claude R. Wickard, as Secretary of Agriculture of the United States of America, and his successors in office. The method of controlling insects comprising exposing the insects to a compound of the general formula

 $\begin{matrix} H & O \\ & \parallel & \parallel \\ R=N-N-C-NH_2 \end{matrix}$ 

where R represents a member chosen from the group consisting of a cycloaliphatic radical and a cyclo-aliphatic radical having a methyl substituent.

No. 2,374,544, Detergent Composition, patented April 24, 1945 by Lester F. Hoyt, East Aurora, N.Y., assignor to Allied Chemical & Dye Corp., New York. A detergent composition in the form of a solid mass adapted for toilet purposes and possessing cleansing and sudsing prop-erties similar to those of ordinary soap, comprising as its essential components a solid non-aromatic soapless detergent which is a neutral, alkali metal salt of an anion-active polarnonpolar organic derivative of sulfuric acid selected from the group consisting of sulfates and sulfonates of higher aliphatic hydrocarbons, sulfates and sulfonates of higher mono-alkyl esters of lower mono- and polycarboxylic acids, sulfates and sulfonates of polyhydric alcohol partial esters of fatty acids, sulphates and sulfonates of lower alkyl ethers of aliphatic alcohols, and sulfates and sulfonetes of monoalkyl amides and imides of polycarboxylic acids, said derivatives having a single higher open-chain hydrocarbon group of 12 to 14 carbon atoms in the nonpolar portion of the molecule, in intimate mixture with at least a substantially equal weight of thiourea, said thiourea serving to protect said soapless detergent from the dissolving action of water and to protect the composition from disintegration, during toilet use.

No. 2,374,754, Process of Producing sterilizing and Disinfectant

Products, patented May 1, 1945, by Ignaz Kreidl and Wernr Kreidl, New York, assignors, by mesne assignments, to Synochem Corp., New York. The method for the production of sterilized and disinfectant substances which comprises treating a reducible compound of oligodynamically active metal with a soluble metal formate selected from the group consisting of aluminum formate, thorium formate and zirconium formate.

No. 2,374,918, Compositions for Parasiticidal Use, patented May 1, 1945, by Kenneth R. Brown, Kenneth Square, Pa., assignor to Atlas Powder Co., Wilmington. An active ingredient for insecticides comprising a synergistic combination of a rotenone—containing toxic agent and a partial ester of a neutral, low molecular weight polyhydroxylic organic compound with at least 4 carbon atoms and a ratio of carbon atoms to hydroxyl groups not exceeding 3, and as the only substituent a fatty acid of 18 carbon atoms selected from the group consisting of monoenoid and dienoid acids.

No. 2,374,999, Pest Control, patented May 1, 1945, by Gorge E. Holbrook, Wilmington, Del., and Frank H. Kaufert, St. Paul, assignors to E. I. du Pont de Nemours & Co., Wilmington. The method of protecting wood and wood products from attack by termites which comprises impregnating the terrain surrounding the wood with a eutectic mixture of isomeric dichloromono-nitrobenzenes.

No. 2,375,095, Insecticides, patented May 1, 1945, by Lawrence H. Flett, Hamburg, N. Y., assignor to Allied Chemical & Dye Corp., New York. The process of controlling insect pests infesting vegetation, which comprises subjecting the insect pests to the insecticidal action of a composition comprising as an ingredient toxic oinsects a mixture of nuclearly alkylated aromatic hydrocarbon sulfonates containing at least 10 carbon atoms in an alkyl group, in which the aryl nucleus is selected from the class consisting of benzene and naphthalene hydrocarbon nuclei and the alkyl group is derived from a mineral oil.

No. 2,375,382, Insecticides, patented May 8, 1945, by Kaspar Pfaff, Michael Erlenbach, and Walter Finkenbrink, Frankfort - on - the - Main - Hocht, Hans Maier-Bode, Wolfen Kreis Bitterfeld, Kurt Meisenburg, Leverkusen, and Marianne Meisenheimer, Leverhusen-Kuppersteg, Germany, assignors to Winthrop Chemical Co., New York. An insecticidal composition of matter comprising tetranitro-carbazole and an inert extender.

(Turn to Page 121)

### CRESYLIC ACID — FORMALDEHYDE

#### **AROMATICS**

Phenyi Ethyi Alcohol Methyl Acetophenone Acetophenone Geranyl Acetate Yara Yara Phenyl Ethyl Acetate Amyl Cinnamic Aldehyde Benzyl Acetate Benzophenone Nerolin

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#### Acid Value of Colored Oils

To determine the acid value of dark-colored oils, boil 25 grams of oil in a tared flask with alcohol under a reflux condenser for 10 minutes. When the boiling has ceased, transfer to a measuring cylinder and allow to remain until the oil has separated completely. Remove an aliquot of the oilfree alcohol and titrate with standard alkali to a phenolphthalein end point. R. S. Robinson. J. S. African Chem. Inst. 27, 19-21.

#### Chemistry of Fat Spoilage

Theories have been proposed for the addition of oxygen to the double bond, formation of a peroxide, addition of oxygen in the double bond neighboring a methylene group, addition of oxygen to one of the groups of a double bond with eventual peroxide formation, and the formation of a loose molperoxide. In addition there appears the possibility of combined autoxidation with other material. Decomposition products which have been identified include a number of aldehydes, ketonic acids, and products of peroxide character. The gaps in our knowledge of fat decomposition are large. K. Taufel. Fette und Seifen 50, 387-92; through Chem. Abs.

#### Soap on Goggles

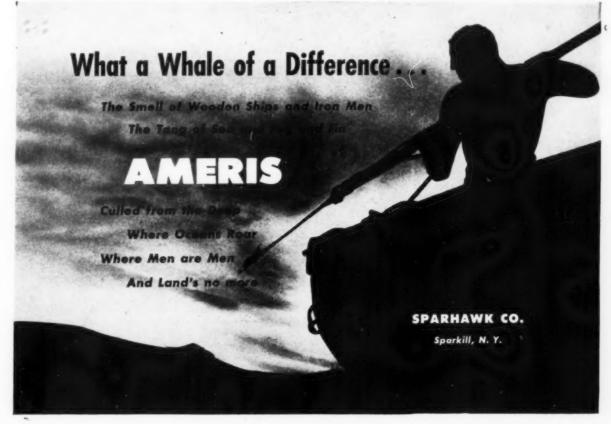
Safety goggles and face shields, whether of glass or of transparent plastic, may be kept clear and substantially free from fogging if dry soap is rubbed on the surface and then polished with a lint-free cloth or other suitable tissue. This idea forms the basis of a patent (U. S. Patent No. 2,333,794) for making soap-impregnated tissues for simultaneously cleaning and antimisting glass surfaces or other similar surfaces. Bull. Assoc. Am. Soap & Glycerine Producer, June, 1945.

#### Monoglyceride Determination

A method based on oxidation of monoglyceride by periodic acid is described for the determination of monoglyceride in fats and oils. The reaction and conditions for the determination are discussed. W. D. Pohle, V. C. Mehlenbacher, and J. H. Cook. Oil & Soap 22, 115-19 (1945).

#### Oil of Patchouli Monograph

A monograph on "Oil of Patchouli" has recently been published by the Board of Scientific & Industrial Research, Government of Mysore, and we are indebted to the Government Soap Factory, Bangalore, for a copy. The authors are M. N. Subba Rao and M. Nagesa Rao, both chemists in the Government Soap Factory, which has been operating a plant for the distillation of oil of patchouli for the past twenty-five years. Incidentally the soap plant has also made experimental plantings of patchouli and expects soon to start growing patchouli on a substantial scale. Patchouli occupies an important place in soap perfuming and as a soap perfume blends well with geranium, clove, vetivert, cassia and other oils. The first part of the monograph contains general notes on the technical aspects of patchouli oil and patchouli leaves, its botany, chemistry, cultivation, distillation, etc. The second part reviews the experimental work on patchouli, conducted by the authors in the laboratory of the Government Soap Factory.









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#### Hardness of Commercial Soaps

The hardness, termed the yield value, of framed, milled, and the new converter soaps was measured as a function of temperature with the aid of a cutting-wire plastometer. The yield value is the force at which flow becomes observable practically in the soap, under the usual conditions of test in which a steel wire attached to one arm of a torsion balance is pushed through the soap.

Such rheological measurements may be useful for the determination of phase diagrams, since considerable differences in the arbitrary firmness can be detected at room temperature between beta, gamma or omega, and delta soap phases. Yield values of soaps at room temperature were determined as a function of the thermal history of the sample, the general result being an increase in hardness after heating. These data bear on questions concerning the internal nature of the phases, the development of secondary structure, and the effects of induced orientation of crystallites in the soap bar.

Time, temperature and mechanical working during soap processing affect the rheological properties of the final product.

Changes in the slope of the curves of yield value versus temperature for framed soap appear to be independent of the rate at which the bar was cooled, even though the actual magnitude of the yield value may vary greatly. They are therefore indicative of phase changes. Rapid cooling results in increased hardness. This is explained in terms of increased randomness of orientation of the crystallites, but is difficult to reconcile with recently proposed phase theories for these systems.

Most converter soaps represented by "Swan" and "New Ivory," appear to undergo transitions at 43-46°C. and 63-66° C., irrespective of the water content or the composition of the soap stock, contrary to all published phase diagrams for aqueous soap systems.

The hardness of soaps is very sensitive to electrolyte content, first

decreasing to a minimum at about 0.7 per cent of sodium chloride and subsequently increasing with further increase in salt concentration. Within the group of converter soaps studied, change in water content does not have so great an effect on hardness as change in stock formula, provided moisture is not reduced to the point where new phases make their appearance. The yield value increases as the percentage of coconut oil soap is increased and decreases with increase in the proportion of oleate.

Because of the large amount of air distributed throughout the bulk of converter soap, it might be predicted that the change of yield value with temperature would be greater for converter soaps than for milled and framed soaps. It was found that the yield value of converter soaps usually decreased a little more than 50 per cent between 30° and 40° C. whereas the decrease with the other soaps was not so great. R. D. Vold and L. L. Lyon. *Ind. Eng. Chem.* 37, 497-504 (1945).



#### SOAP MARKET SURVEY

(From Page 41)

#### Brushless Shave

Since 1941 the number of users of brushless shaving cream in the Milwaukee area has been increasing steadily. This product is now used by 28.2 per cent of Milwaukee men as compared with 21 per cent in 1941. The number of brands sold has declined, there now being 38 brands in general demand as compared with 60 in 1943, and 56 in 1944. "Burma Shave" is the best seller, being preferred by 18.2 per cent of buyers, while "Palmolive" holds second place, with 16 per cent. "Barbasol" is third with 14.9 per cent and "Molle" fourth with 13.2 per cent.

#### Tooth Paste

Among the dentrifice group, tooth paste registered a big increase in popularity this year, and is now used by 69.3 per cent of all Milwaukeeans as compared with 59.2 per cent a year ago. The number of brands on the Milwaukee market is now but 52 as compared with 68 a year ago. "Colgate" still holds first place, being preferred by 29.2 per cent of buyers. "Pepsodent" retains second place with a preference of 25.4 per cent and "Ipana" is still third with 13.8 per cent.

#### Tooth Powder

There has been a drop this year in comparative use of tooth powder among residents in the Milwaukee area. Tooth powder is now used by only 49.4 percent of potential buyers, as compared with 55.4 per cent in 1944. The number of brands stocked is now 52 against 68 a year ago. "Dr. Lyon's" is still well out in front of all competitors in popularity, being preferred by 43.5 per cent of buyers. "Pepsodent" holds second place with 17.4 per cent and "Colgate" third with 12.4 per cent.

#### Liquid Dentifrice

Liquid dentrifice declined somewhat in popularity this year, and is currently being bought by 17.3 per cent of the residents as against 18.2 per cent a year ago. Only 8 brands are on the market. The leader is "Teel" which is preferred by 88.2 per cent of all liquid dentrifice buyers.

#### Toiletries Purchasing

A separate section of the Milwaukee report this year reviews consumer buying habits in the purchase of cosmetics and toiletries. There has apparently been an increasing tendency on the part of Milwaukee residents to buy their cosmetics and toilet preparations at department stores. This has been at the expense of sales by chain stores, 5 and 10s, variety stores and drug stores. This year department stores were the preferred source for purchases of cosmetics and toilet preparations by 53.4 per cent of all Milwaukeeans. This compares with 43.9 per cent in 1944. Sales by independent drug stores dropped from a 1944 rating of 24.2 per cent to a 1945 figure of 20.3 per cent, while the decline in chain drug figures was from 15.6 per cent in 1944 to 10.4 per cent this

#### Analysis of Fats and Oils

By determining thiocyanogen values of oils with the use of 200 per cent excess reagent and 1.66 grams of powdered potassium iodide, results obtained in different laboratories were in better agreement than formerly. An acceptable fat-stability test is described in detail in which the sample is aerated under fixed conditions and the peroxides determined. The hexabromide test was studied but discarded as inexact and unreliable. The S.P.A. method appears to be the most satisfactory for determination of unsaponifiable matter. Committee on Analysis of Commercial Fats and Oils, V. C. Mehlenbacher, Chairman. Ind. Eng. Chem., Anal. Ed. 17, 336-40 (1945).

#### Surface Tension and Time

The variation of surface tension with time, of aqueous solutions of sodium sulfolaurate, sodium oleate, sodium glycoholate and certain proteins, was determined. It is necessary to distinguish between compounds whose molecules orient instantly and compounds that form rigid films with slowly orienting molecules. No one law can be applied to both types of compounds. A. Dognon and L. Gougerot. J. chim. phys. 40, 127-32.

#### CASTOR OIL

(From Page 43)

the program more energetically has had the effect of allowing the idea to die quietly. A partial explanation of the government's attitude is that government sponsored growth of a crop in competition with that of one of our "good neighbors" to the south would not look well. At any rate, raising of castor beans in this country has not been conducted successfully on a commercial scale.

Indian castor beans, as might be expected, go principally to British buyers.

Of the two grades of castor oil principally used, No. 1 or C.P. is a clear water-white oil low in fatty acid. It is this type that soapers use principally. The No. 3 grade is higher in fatty acid content and of a yellowish to greenish color. Characteristics of the No. 1 grade for spapers are Iodine No. 82-90; Saponification Value 177-187; Unsaponifiable 0.3-0.7 per cent; Titre of fatty acids 4.9; Acetyl value 146-150. Castor oil soaps dissolved in large amounts of water dissociate to a lesser degree than do other vegetable oil soaps. When blended up to approximately 20 per cent with other vegetable oils, potash soaps so made have their lather and solubility properties greatly improved when used in cold or tepid water.

In view of a shorter supply of castor oil, and a greater demand for it on the part of industries manufacturing military paints, etc., it does not seem likely that soapers will in the months ahead use anything like the quantity that was used last year. They might—if—and it's the usual awfully big if, more ships were available that could be sent down to Brazil to bring back something like the quantities of beans and oil that were brought in in 1943.

#### Cousins Joins Grocery Co-op

M. J. Cousins, formerly regional manager for Solventol Chemical Products Corp., has become associated with Thrifty Co-operative Grocery Co., in Chicago.

# SARITARY PRODUCTS

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Floor Products • Polishes • Chemical Specialties

My boss says I gotta put up with all the flies this summer, 'cause there's no concentrate on the market for fly spray.

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Many insecticide manufacturers are using HI-TOX in their sprays because of its efficiency and economy. But HI-TOX is still available to any others who are seeking a dependable concentrate.

However, for your own safety, keep a sixty day supply of HI-TOX on hand at all times. Unavoidable railroad congestion means delay in shipments.

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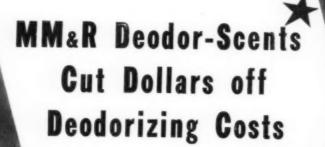
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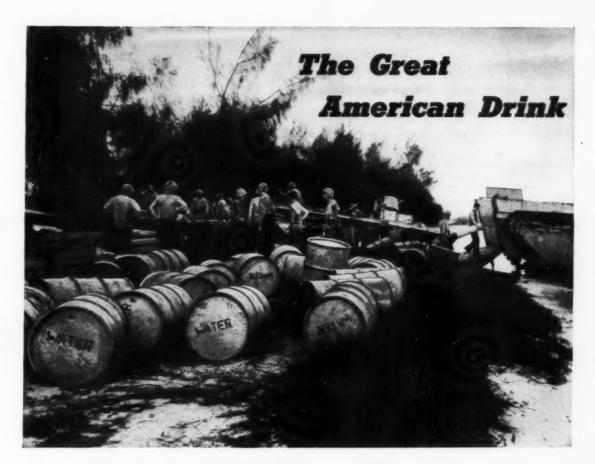
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THIS OFFICIAL U.S. Navy photograph shows Rheem drums on the beach at Saipan. The caption said: "Drums of water in the foreground were a welcome sight to thirsty, tired troops who suffered from water shortage on the island."

In all our island landings precious drinking water is one of the first items ashore. And it hits the beach in rugged steel containers, because only steel containers can take the necessary punishment.

Drums of water, gasoline and oil aren't babied in this war. They get jolted, dropped, pounded by surf, blistered by the sun.

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beach-head above, stand up under such punishment. Their flash-welded, leak-proof construction has done the job it's designed to do . . . provided airtight protection under the roughest handling.

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RHEEM's nation-wide network of plants is prepared to deliver drums where and when wanted.

#### Your Product Deserves the Protection of a Rheem Container





# INSIDE NEWS

JULY

PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y.

1945

### Wartime Citronella Oil Scarcity Spotlights Increasing Output of Domestic Synthetic Product

When hordes of war-crazed Japs swarmed ashore on Java in the dark days of early 1942, the American man in the street was quick to realize the loss to the United Nations of valuable rubber and oil reserves. Less known to the general public, however, was the loss of an aromatic raw material important to soap makers. United States supplies of Java Citronella oil, a standby of long standing, were cut off almost overnight.

Today as our inevitable victory over Japan moves steadily towards a hard-won final triumph, the reconquest of Java appears to be only a matter of time and military strategy. As greater and greater areas of that populous and wealth-producing region will have been rewon, its rich natural resources will again be available to the democratic world through normal international commerce. Ships will carry Java rubber across the seven seas once more, with oil shipments following somewhat later when installations will have been rebuilt after our strategic bombings of Japheld industrial positions.

But, after V-J Day, Java citronella oil may

But, after V-J Day, Java citronella oil may not be as widely imported by us as previously. Industrial developments in the United States may prove to make important permanent changes in the type of perfume agents most widely used in soap making. For wartime citronella oil scarcity has merely served to throw a spotlight of wider publicity on the increasing production and consumption of a domestic synthetic alternate which fulfills the former function of the Javanese product, as a perfuming agent.

Known as javonella, this all-American perfume agent is a pre-war development which has widened its usefulness under the spur of present-day shortages of imported competitive products. Developed some years ago by the research laboratory personnel of a Brooklyn, N. Y., corporation, javonella was produced to serve as a perfume agent in laundry soaps, cleansers, polishes and other technical products, imparting to them a clean, pleasant odor. It was particularly designed to overcome the greasy or fatty odor often present in inexpensive soaps.

With a marked similarity in character to Java citronella oil, javonella possesses certain modifications said to adapt it unusually well to its major role as a soap perfume. In fact, many manufacturers preferred it even before imported citronella oils became so scarce and so relatively high in price.

A number of them found its odor, which is of a minty, rosy character to be not only more pleasant than the odor of the Java perfume agent, but actually longer lasting also.

Whatever the trade conditions after the war may prove to be, one conclusion seems likely: a great part of javonella's warstrengthened popularity will be a permanent gain for this entirely domestic synthetic.

Perfume agents as well as the liquid cleansers and powdered soaps in which they are used, deserve the greatest possible packaging protection against deterioration. So another postwar prediction which can safely be made at this date is a forecast that tin containers will do their full part in delivering aromatic chemicals and soaps alike in a condition that insures undiminished effectiveness.

# proved to have disinfectant as well as detergent properties. Some of them have proved to be effective in destroying water-borne cysts. The following applications seem to be indicated: water disinfection, sanitation of eating utensils, cleansing of water filters, safeguarding of shell fish, and cleansing and disinfection of contaminated vegetables and fruits. 1019

#### Non-Flammability in Paint

Chlorinated poly-iso-olefine resins, containing 55 to 75% of chlorine, according to a recent foreign patent, present interesting properties. They are hard and clear, soluble in drying oils, compatible with many other resins, non-flammable, and rapid-drying from solution. They are claimed to impart their non-flammable characteristic to paints, varnishes and lacquers. 1020

#### **Resins from Cashew Nut Shells**

Cashew nut shells enclose a viscous liquid from which polymerized resins, now made, are finding interesting uses in industry. These resins are rubbery, infusible, insoluble, and possess excellent acid and alkali resistance. They are used in the electrical industry as stopping and filling agents in oil-filled cables, as splicing compounds, and as filling compositions for terminal boxes. 1021

#### **Sprayed Snap Beans Tested**

In order to control insects, especially the Mexican bean beetle, snap beans are sprayed with arsenicals. Experiments were conducted to find whether the ordinary canning procedure is effective in removing harmful arsenical residues. Various types of arsenicals and diluents were used. Results show that most residues are below the tolerance level after ordinary processing.

#### **Hexides for Tobacco Products**

A new patent covers the use of hexides (hexitol dianhydrides) as conditioning agents in the manufacture of tobacco products instead of the ingredients now used to modify the natural flavor and aroma of tobacco. The new substance is reported to modify the tendencies of loose cigarettes to lose freshness and acquire bitterness while being smoked.

#### **Housekeeping Pays**

The British use small portable vacuum cleaners in storage rooms, particularly for grain. Accumulations of dust and loose grain in floors, beams and ledges provide ideal breeding places for weevils and other organisms. Portable cleaners of the flexible hose type, with electric or gasoline driven blowers operating outside of the storage building, reach otherwise inaccessible spots, with great improvement to the quality of stored grains.

At least one American manufacturer, a spice grinder, finds that constant use of a vacuum cleaner in his storage and manu-

#### **Antigen for Allergies**

A method of combining histamine with a large molecule to form a coupled reaction product which can be used as an antigen for developing resistance to allergic reactions is announced. Allergies are reported to be treated without prolonged testing.

1016

#### Soy Bean Developments

Soy bean sprout production for canning or freezing has developed significantly, yet little care is taken to secure good sprouting seed. Work sponsored by the Emergency Food Commission emphasized that a super seed stock is necessary. Seed should have germination of 90% or better, should be of the current year's crop, well matured, free from soil fungi and bacteria and free from thresher in-

jury. Early harvested seed stocks proved to be low in the amount of hacteria carried on the seed coat. Improvements in the technique of sprouting are also under study. 1017

#### Insecticide from Benzene Hexachloride

A new insecticide developed in England is said to be particularly effective against locusts, crickets, the body louse, bedbug, leaf eating larvae and beetles, weevils, ants and wasps. The new insecticide is reported as being derived from benzene hexachloride.

#### **Synthetic Detergents**

A number of the synthetic detergents newly introduced as substitutes for soap have

# NATIONAL CAI



facturing areas is indispensable in fighting dust and dirt, and the insidious losses in quality that come through flavor pick-up.

#### Fish Across the Ocean

Shipment of 70,000 cases of canned salmon from Canada to Australia under the "mutual aid" agreement of the United Kingdom is made necessary not because of any lack of fish but because of the paucity of canning facilities in a country that heretofore has had no need for processed foods. 1025

#### To Keep Them Straight

Sugar chemistry is so complicated that the Sugar chemistry is so complicated that the foundation, which sponsors the research work in new industrial and nutritional uses for sugar, has found it necessary to make a grant for one year to an expert on technical literature for the purpose of devising a system to classify sugar derivatives, and compiling a list of new derivatives discovered since

#### For Safer Walking

Construction materials developed for airplane and ship use may make contributions to sanitation and cleanliness in postwar food plants. These include the nonslip walkway surfacing of thiokol rubber and ground cork, applied with a spray gun and ready for use in 12 to 14 hours, which remains flexible at temperatures from -20 to 160 deg. F. Another floor, used for shower and locker rooms, is reported to be non-conductive and resistant to soil, grease, fire and shock. As an added virtue it is bacteriostatic.

#### Red Points Down Under

It has been announced that meat canned in Australia in 1944 showed a six-fold increase over the prewar output. Production in 1939-40 was only about 15,000 tons. This had been increased to 78,000 tons by 1943. Out of a total of about 91,000 tons in 1944, civilians got 6,500 tons. The civilian quota includes purchases for "ships' stores." 1028

#### **Our Congratulations to** Chemical Warfare Service

The Chemical Warfare Service of the United States Army has marked its 25th anniversary. We at National Can Corporation wish to extend our sincere congratulations.

We should like to express our appreciation, too, of the pleasant dealings we have always enjoyed with Chemical Warfare. At the same time we are also grateful to our many peacetime customers for bearing with us while we play our part in aiding the war effort.

### **Technical Topics**

ASPARAGUS BUTT JUICE-When com pared with oil-seed meals, the pressed juice from waste asparagus butts and trimmings offers several advantages for providing a media to develop bacteria. Nutrients of vegetable origin (soy bean, peanut, cottonseed, etc.) are commonly utilized in the microbiological production of solvents, organic acids, enzymes, and recently antibacterial substances. In view of the current inadequate supply of some of these vegetable materials, the using of asparagus-butt juice or similar eplacements have been reported as possi-

ANTIBIOTIC SUBSTANCES FOUND IN SUSTINICES FOUND IN BUTTERCUP JUICE - Antibiotic substances have been found in many microorganisms, including several soil bacteria. Now a remedy full of promise is found in buttercup juice, extracted from leaves and blossoms of buttercup. 1030

NITROGLYCERINE BASE ROCKET POWDER INGREDIENT — Nitroglycerine and nitrocellulose are the base ingredients of rocket powder as used in bazookas and landing craft rocket guns. Despite widespread use by virtually every belligerent, rockets are even now largely in the experimental stage. Rockets, for instance, are inaccurate in comparison with guns. Many problems connected with rocket manufacture and tactical use are still far from being solved.

HYDROXYACETIC ACID - A new British patent describes a process for the pro-duction of substantially pure hydroxyacetic acid by crystallizing it from aqueous solutions. The process permits preparation of this acid from esters of the acid. According to the patent this has heretofore been difficult to accomplish.

CROTONIC ACID - A number of interesting industrial uses are visualized for crotonic acid. Among them are the synthesis of amino acids, pharmaceuticals, plasticizers, various organic intermediates, modified drying oils, and polymerized products such as

REDUCES HIGH BLOOD PRESSURE -According to a recent patent 1,3-dimethyl-y-chloromethyl-xanthine is claimed as effective for combating high blood pressure. It is a white crystalline substance recommended for use in doses of about 1 gr. every 2 to 4 hours.

COMBATS STREPTOCOCCIC INFEC-TION - According to a recent patent, 4-acetamido-4-propionylamino-diphenylsulphone is claimed as effective in combating streptococcic and pneumococcic infections by oral or intraperitoneal administration. or intraperitoneal administration.

PRUNE OIL FOR PHARMACEUTI-CALS - Refined prune oil, made from pits, has been found useful in pharmaceuticals and cosmetic creams.

THERAPEUTIC HORMONE-A method of producing a 99 per cent pure interstitialcell-stimulating hormone is described as a valuable therapeutic agent for the obtention of specific physiological effects in medical situations requiring it.

ADIPIC ACID FOR NYLON-A new British patent claims a continuous process for the manufacture of adipic acid (an inter-mediate said to be used in the production of nylon) by the oxidation of cyclohexanol with the aid of nitric acid.

HYDROCARBON OIL STABILIZED -Hydrocarbon oil used for electric insulation is stabilized with diphenylpiperazine in amounts varying from 0.01 to 1.0 per cent, according to a recent patent.

NEW TYPE INSECTICIDE ATOMIZER A new type atomizer for the spraying of insecticides has been developed which is said to give unusually fine and effective dispersion. One-half cc of a 20% DDT solution is said to be sufficient to give effective treat ment of a 1,000 cubic foot space.

FOR SWEETENING - It has been announced that mineral acids and mold amylase are being used as saccharifying agents for the production of fermentable sugars

DESTROYS WEEDS — In a recent experiment, Sovasol No. 75 was thinned with kerosene or stove oil and sprayed on carrot or parsnip gardens. This was found to kill weeds effectively without injuring the vege-

Every effort will be made to furnish additional information on these articles. Where such information is not obtainable, we will refer inquiries to the original source of the article. Write to National Can Corporation, 110 East 42nd Street, New York City. Please mention the number at end of article - also name of the magazine you saw it in.

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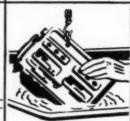
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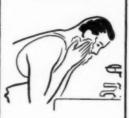
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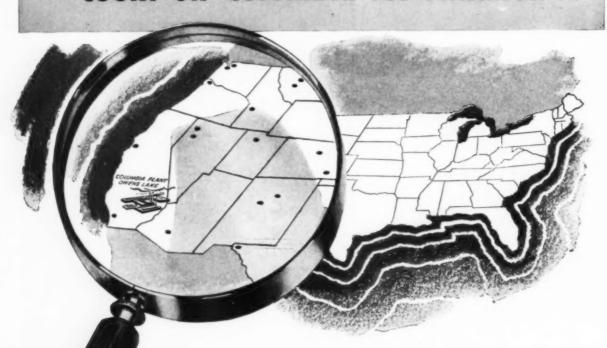
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### THE FUTURE IS...TOMORROW

The picture for 1946 as it concerns household insecticides is gradually becoming both clearer and brighter. There seems little reason to doubt that present difficulties regarding raw materials, packages, labor, etc., will be alleviated to a marked degree. Even though some handicaps will continue to exist, it seems sure that manufacturers can look forward to greater freedom of action than has been enjoyed for some time.

Whether pyrethrum will be freely available for general use cannot be predicted at this time.

Too many unknown factors are involved, the dominant ones being the extent of military requirements which may easily expand beyond the present level, and the volume of Kenya production which depends largely on weather conditions during the summer and fall months.

A long-range view points to ample pyrethrum supplies, perhaps soon or perhaps later. By October more definite views should be possible. The best that can be said now is that there is some basis for hope.

Another uncertainty, also accompanied by hopeful indications, is the degree to which manufacturers will be able to benefit for the 1946 season by the new products and new techniques which have come to the fore in the last three years, and some of which are still decidedly in the developmental stage so far as general civilian use is concerned.

As a matter of fact, the industry may well benefit if this particular blessing comes gradually. So many new materials and new ideas have evolved that at best it is easy to foresee a period of considerable confusion while manufacturers attempt to weigh the relative merits of new products and appliances and sort out the wheat from the chaff. This difficult process is sure to be further complicated by conflicting claims and by the lack of practical experience with the new materials and devices.

As a reliable guide in this coming confusion we can only reiterate our previously expressed opinion that the household insecticide of the future must be effective and that to whatever extent circumstances permit this effectiveness must be obtained with products which are not subject to any possible criticism on the part of consumers or officials because of toxicity, irritation, odor, or other undesirable characteristics.

Our own research and development have been directed toward this objective, emphasizing safety as much as effectiveness, and with successful results. Quite soon, we hope, it should be possible for us to announce these results and make them tangible to insecticide manufacturers in the form of materials for their use.



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SCIENCE IN REVIEW

A Highly Organized 'Blitz' Is Carried Out To Rid a Large City of Rats

Speaks

By WALDEMAR KAEMPFIERT

Citizen-business-Government cooperation to a high degree marked the recently completed anti-rat blitz in Louiswille. More than 1,000,000 poison pellets were either made up and distributed or the materials supplied householders, who "rolled their own." A "test run" was made of a certain area at the start to determine effectiveness of the poison used, and one of the publicity pictures—showing eleven dead rats fourd in a store after the poison had been used and an accompanying newspaper rticle brought in 10,000 telephone calls for poison.

The rat poison used was one part i.ed Squill to ten parts food bait, mixed in large concrete mixers at a municipal incinerator. All the food base—chopped meat, ground bread and meal—was donated by local meat-packing houses,

bakeries and flour mills.

The poison at first was wrapped in wax paper as "pellets" by block wardens and other volunteer workers. A conveyor-belt system was used, with some workers placing the 7-by-9-inch sheets on the belt, others placing the poison on the paper, and still others folding the paper and twisting the end to make the pellets.

to make the pellets.

At first, district chairmen transported bags of ten pellets each to block wardens for distribution in their blocks. Response to the campaign was so great, however, that the conveyor-belt system was used to load four-ounce programs with poison which, with wax paper, was taken to eight fire-engine houses. Householders were invited to call for the poison and make their own pellets.

During the peak of the campaign police instructed all stores, restaurants and hotels in the business districts to provide themselves with standard garbage cans and close-fitting lids. If requirements were not carried out within a specified time a \$10 fine was levied.



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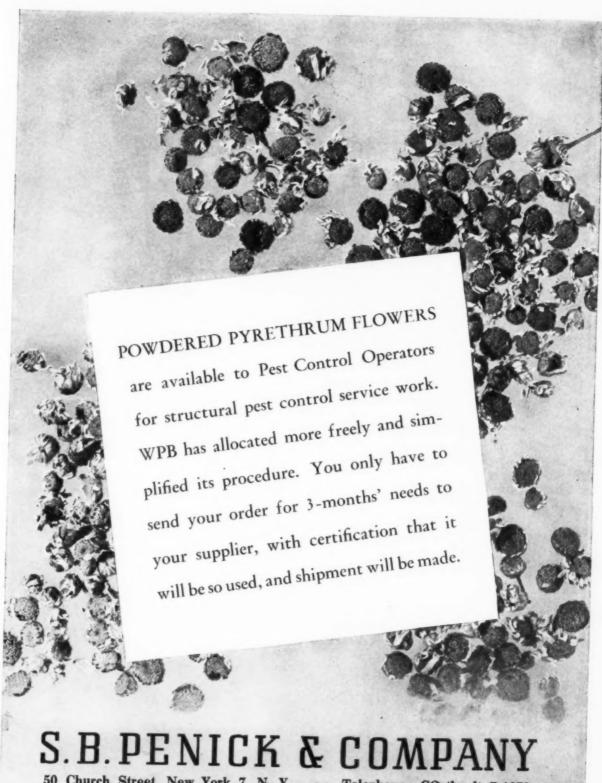
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The Behavior, Life History and Control of Household Pests

#### By ARNOLD MALLIS

HIS new book is a thoroughly practical, complete and up-to-date study of pest control which will be invaluable to every insecticide manufacturer, pest control operator and entomologist. Approximately 570 pages in length, and containing 140 illustrations, it deals in a practical way with the behavior, life history and control of household pests.

While there have been other books in this field, Mr. Mallis' book is by far the most complete and up-to-the-minute practical text on the subject. It reflects insecticide developments as recent as those of the past few months, carrying for instance, the most recent findings on DDT, aerosol insecticides, insect repellents, etc. The emphasis throughout is on control measures, and the author covers fully all the commonly used insecticide materials and treatments. Fumigation is the subject of a special chapter.

An unusually complete list of references to the literature on household pests, insecticides and their use adds considerably to the value of Mr. Mallis' new book. Hundreds of references to the technical literature are listed.

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### SANITARY PRODUCTS

#### A SECTION OF SOAP

Official Publication National Association of Insecticide & Disinfectant Manufacturers

TN the post-war market, the newer highly concentrated insecticides represent a type of product which may pose keen competition eventually for the regular household spray and for the aerosol type of insecticide. Used with special applicators which give a fine mist, research thus far indicates them to be effective and economical insect killers under a number of conditions of use. They have some of the advantages of the aerosols and lack some of the disadvantages. But, like the aerosols, they must be produced and sold, including the means of application, at prices which will be competitive with the regular oil sprays. Containing as they do ten up to twenty per cent of active toxicants such as pyrethrins, DDT or other synthetic, their careless use could be wasteful and costly. But, their possibilities are still great and it is probable that more will be seen of them commercially after the war.



Not only had the Germans used DDT for some time, but well before V-E Day, they had developed a number of improvements, either derivatives or chemically similar to DDT. Over the grapevine, these "improved" versions of DDT have been reported to be at least five in number, one of which finds fluorine replacing chlorine at several places in the molecule. The new products are stated to be "four times as effective as DDT," — but the insects or conditions are not specified. Whether they are more or less toxic to humans than DDT is likewise unknown. One of the products is thought to be difluoro diphenyl trichloro-

ethane, but that is labeled strictly as a guess. There seems to be an inclination in some government quarters to "hushhush" these new products much after the fashion in which DDT was treated a couple of years ago. The new products may have great significance in the future of insecticides, but thus far our only information concerning them is strictly of the grapevine variety.



SURVEY by the National Sanitary Supply Association covering facts in regard to the industry as they apply to the returning veteran should form the basis of an extremely useful plan in helping to relocate some members of the fighting forces who are being returned to civil life. It is these younger discharged service men who should make up the rank and file of an aggressive industry sales staff over the next few years. With proper guidance, they can successfully carry out the more ambitious sales plans which the Association has been formulating. But without guidance, — and here lies the usual danger of the desire for "my own little business," failure is very likely. In short, too much emphasis cannot be placed on advising the veteran against trying to go into his "own little business" upon leaving the service, upon advising him of the pitfalls of such a plan, and upon advising him to seek employment with an established firm. Knowing that NSSA plans aim in this direction, we feel that the results of the survey can be extremely helpful in stabilizing future employment within the industry.

### CHEMICAL WEED KILLERS

#### By Robert A. Stetson

ANUFACTURERS of garden products, such as insecticides, fertilizers and the like, might do well to look into the potentialities of kindred products — namely, chemical weed killers or herbicides. Practically unknown to most people, including many professional gardeners and grounds keepers, weed control materials offer many definite advantages. Providing positive savings in time and effort, their use also affords visible evidence of good results.

There is nothing especially new about weed killers, such products having been known and used for about fifty years. It is only within the last decade or so, however, that real interest has been shown in herbicides. This is evident, not only in the growing number of discussions on the chemical control of weeds, but also by the granting of many patents covering new methods for securing such control.

As remarked by Brenchley, (1) weed control must be considered from two distinct viewpoints. In the first and older aspect, the object is to eliminate all vegetation either temporarily or in such a way as to prevent its recurrence for as long as possible, this involving more or less complete sterilization of the soil. This mode of action has found rather established application to railway tracks, roadsides, drives and paths, stone hedges, tennis courts, parking lots, airfields, fire-breaks, and other areas where plant growth of any sort is undesired. Such action has also been utilized in the eradication of poison ivy, poison sumac and the growths responsible for many cases of hay fever. In the hands of the smaller, home user, a weed-killer, applied in a narrow band close to well-grown trees,

vines and shrubs, as well as posts, fences, sidewalks, and building foundations, helps to keep down weed and grass growth, enables the lawn mower to do a clean, efficient job, and eliminates much tedious work—all this, and a long-lasting, neat appearance, too. It is with such applications that this discussion is especially concerned.

The other, newer view of herbicides is that they shall be selective in their action; killing or retarding weeds while leaving crops or other desirable growths unharmed. Though already finding practical application on many thousands of acres, selective weed killing is still largely in its experimental stages. Indeed, the chemical control required is quite a delicate matter, involving careful selection of herbicides and due consideration of variations in the rate, method and conditions of application. Further work along these lines offers tremendous promise to agriculture.

Like insecticides, which they resemble in many respects, weed killers must be applied with an appreciation of their methods of use, their limitations and, in some cases, their possible dangers. Used as solutions or in dry form, it is esential to know the proper concentration of weed killer to be used per specific area of ground. Too high a concentration will result in leaching or seeping into areas where herbicidal action may not be desired. Chemicals which destroy weeds are also capable of injuring desirable growths. It must be remembered that, for most weed killers, there is no fundamental distinction between weeds and other plants.

The length of time the herbicidal action persists may also be a considerable factor. Some weed killers continue effective for years, while the action of others lasts only a few months. Those with a shorter period of action are often applied to the soil in the autumn and by spring the ground is ready for sowing; weeds having been destroyed during the interval. This procedure has proved quite valuable in preparing lawns and garden plots for replanting with lessened occurrence of weeds and other undesired plants.

Most weed killers must be handled with a certain degree of caution. Some, like arsenicals, are definitely toxic, while others, such as the chlorides, may be associated with definite fire hazards under certain circumstances.

Because some weeds are able to resist the action of herbicides, it is often desirable to add a "spreader" or weting agent to the solution. Soap is quite efficient for this purpose. Various other substances may also be used for their spreading effects. Soluble oils, sulfonated ester compounds and pentachlorophenate; this last acting both as a spreader and activator, are mentioned as suitable materials. (2)

A large number of chemical substances may be used as weed killers. but only a comparative few have found wide acceptance, and of these, some are unsuited for use in inexperienced hands by reason of toxicity or their caustic nature. The arenicals undoubtedly fall into this latter category. As remarked by Brenchley, (1) for soil sterilization nothing has yet been found to equal arsenic in effectiveness and, despite its extremely poisonous nature, it is still quite extensively employed as a weed killer. Studies (3) in California have shown that sodium arsenite is rapid in its toxic action and decreases in toxicity only slowly over a period of years. An application



One of the largest outlets for weed killers has been to the railroads. Used regularly along the railroad right-of-way, a weed killer not only minimizes the danger of grass or brush fires but also improves visibility as well.

equivalent to 5 pounds of arsenic trioxide per square rod will kill 95 per cent of the annual growth the first year, and 80 per cent the fifth year. Arsenic trioxide applied dry was not highly effective the first year, but thereafter it is even more potent against perential weeds than was the sodium salt. It was found that the addition of sodium chlorate to these arsenic salts combines its rapid action with the lasting properties of the arsenicals.

In a discussion of chemicals for killing "weed" trees, Stevenson (4) reported that the use of sodium arsenite at the rate of two pounds per tree gave 100 per cent kill. The salt should be dissolved in one gallon of water and applied with a sprayer.

DESPITE their long-lasting effectiveness, arsenicals are obviously far too poisonous for general, about-the-house use. Hence, attention has been shifted to less toxic compounds. Good results have been obtained with sodium chloride, sodium chlorate, various sulfates and, more recently, with ammonium sulfamate.

Sodium chloride, or common salt, is undoubtedly the oldest practical herbicide. One need only recall that ancient Carthage was sown with salt by its Roman conquerers to realize that this material's herbicidal action

has long been appreciated. One older text (5) points out that weeds ordinarily growing in sidewalks and paths may be destroyed by the application of common salt. Salt, one pound per gallon of water, is applied as a hot solution with a watering pot with a spray nose. One pound per square yard of surface is used the first year and weaker solutions may afterwards be applied when required. It is claimed such treatment will keep weeds and worms away for two or three years.

Salt is also effective for eradicating poison ivy. The spray solution for this purpose is prepared by adding about three pounds of common salt to a gallon of slightly soapy water. The spray should be applied as a fine driving mist to the leaves and stems of the plants. Several sprayings may be required, but persistent use of the saturated salt solution will cause gradual disappearance of the growths. Poison sumac, often found at the edges of roads and pathways in moist areas, may also be destroyed by salt. From 10 to 25 pounds are required, depending upon the size of individual bushes. (6) Salt has also been effective for permanently eradicating barberry bushes without the need for actual uprooting of the shrubs. (7)

Although restricted because of war requirements, sodium chlorate has

probably been the most widely used weed killer. Ever since 1918, when a patent (8) was granted covering its use for such purpose, sodium chlorate has found ever increasing acceptance for its efficiency as a herbicide and considerable study has gone into methods for using it more efficiently and safely. Compared with arsenic, the chlorates are said (9) to have the following advantages: (a) For all practical purposes, they are nonpoisonous to animals, (b) They are toxic to vegetation, and (c) Areas treated with them for weed destruction can be cultivated within a few months after treatment. The efficiency of sodium chlorate is reduced, however, when it is used under low humidity conditions, because the salt must go into solution to be effective. Sodium chlorate is preferably applied in damp weather, but not if heavy rain is expected.

For paths, roads and tracks, sodium chlorate solutions, made by dissolving 4 to 8 ounces of the salt in one gallon of water, are applied at the rate of one gallon for every ten square yards; (9) the stronger solutions being preferable in wet weather. (10) If deep-rooted weeds and coarse grass are present, a solution of one pound per gallon may be employed. To clear stone hedges or fence rows, a solution of 8 ounces of sodium chlorate per gal-

lon of water is used at the rate of one gallon for very ten square yards.

Sodium chlorate is efficient in eliminating poison ivy. Willard (11) has reported that practically complete control of poison ivy can be obtained, without damage to orchard trees, by spraying with a solution of sodium chlorate applied at the rate of 2 to 3 pounds of the salt per square rod. This treatment can be applied at any time of the year, but best results are obtained with spring or fall applications. Such rate of application had no adverse effects on the trees, but doubling the strength of the solution was definitely injurious. (12)

It has been suggested (9) that land which is to be made into lawn may be treated with sodium chlorate in the autumn before spring sowing at the rate of 4 to 8 ounces of salt per 100 square feet. It is said that most grasses are not affected by the residual traces of sodium chlorate when sown in the spring. However, under some conditions, harmful concentrations may remain for fairly long periods, to the detriment of subsequent garden plantings. (13) Hence, users of chlorate weed killers should be warned of such possibilities. How long the soil will remain toxic depends largely on the type of soil and the amount of water it receives. If it is desired to restore sterilized soil to growing plants, the application of a 1:40 lime-sulfur solution provides a rapid and relatively cheap method of removing chlorates.

Migration or seepage of chlorates through soil as a result of heavy rains must also be considered when these agents are used for weed control. Standing flower pots, seedling boxes and such on areas recently anti-weed treated must be avoided for like reasons. Watering cans, vessels, hose and such used for applying chlorates should be thoroughly cleaned to prevent future contamination. Of course such considerations and precautions hold for all types of weed killers.

Use of sodium chlorate also carries a certain degree of fire hazard. (15, 16) Wood, textiles, paper and other materials saturated with chlorates are highly inflammable. Hence

materials contacted by the chemical should be washed or burned promptly. Chlorates should not be stored or mixed in fiber or wooden containers and wooden sticks should not be used for mixing the solutions.

Various methods have been devised to minimize the fire hazard. Thus the risk of fire may be reduced by mixing other chemicals with the chlorate; calcium chloride, magnesium chloride and borax having been used for this purpose. One British commercial product ("Altacide"), for example, consists essentially of a mixture of about two-thirds sodium chlorate and one-third calcium chloride. (1, 9) Similarly illustrative is the following combination, which is used in very dilute aqueous solution as a weed killer:

Sodium chlorate	*		×		*	×	70.0	parts
Calcium chloride		×					14.5	parts
Magnesium chloride							14.5	parts
Water-soluble dye								part

The dye, it is said, (17) serves as a warning, when the solution is accidently splashed, that garments must be washed out immediately and thoroughly.

It has been found that 2 pounds of sodium chlorate and 6 pounds of borax per square rod will control such perennial weeds as Canada thistle, bindweed, Russian knapweed and quack grass, while a combination of these two in the proportions of 2:10 pounds will kill leafy spurge. Burning the weeds before treatment increases the effectiveness of the two chemicals. (18) It might also be mentioned that vanadium pentoxide and salts of manganese, cobalt and nickel have an intensifying effect on the action of sodium chlorate as a weed killer. (19)

ARIOUS sulfates are rather extensively employed in weed killing preparations. Sulfuric acid works quickly and efficiently and is quite extensively used in England, (1,20) but this acid must obviously be limited to skilled hands. Copper sulfate is quite extensively used, but weather conditions are an important consideration in its use, since rain may remove the salt before it can work. However, moisture remains a requisite for effective action. A 2 per cent solution of

copper sulfate mixed with 10 per cent of sodium nitrate and sprayed at the rate of seventy to eighty gallons per acre has been found effective as a nonpoisonous weed killer. (21) In discussing chemical weed control in lawns, Woods (22) stated that the use of copper sulfate, one gallon of a 10 per cent solution for 250 square feet, proved useful in the control of certain weeds and mosses.

Belanger (23 describes a weed killer based on a mixture containing: Flake calcium chloride . . . . 5 lb. Copper sulfate . . . . . 2 lb.

To be put up in one-pound cans, the contents of one can per gallon of water is said to provide an effective weed killing spray for dandelions and plantains on lawns, pollen-producing plants like rag-weed and golden rod, as well as for morning glory and similar plants which cause unsightly hedges. The spray should be applied freely.

Displaying a rather selective action against certain weeds, iron sulfate has also enjoyed a measure of popularity as a weed killer. (24) On lawns, ferrous sulfate gave good control of pearlwort when used with ammonium sulfate in the ratio of 3:2. Seven ounces of the powdered mixture covers about one square yard. (22) Other, similar combinations, plus sand, have long been used as effective means for reducing weeds on golf greens and lawns. (1) One such consists of: (5)

four ounces may be sprinkled over each square yard of lawn, but in wet weather, the quantity may be doubled. Ammonium sulfate, by itself,

is a good herbicide for some weeds, but on occasion a spreader or wetting agent is required. For example, knot grass resists an ammonium sulfate spray consisting of one pound of the salt per gallon of water, but the addition of one-half pound of soft soap results in effective killing action. (1) An effective solution for killing weeds on lawns, golf courses and the like is made along the same lines, one gallon of solution being used for every eight square yards. (17)

During the last four or five years, ammonium sulfamate has attracted considerable attention as a weed killer. However, its use for such purposes, appears to be covered by patents. (25,26) Said to be as effective as sodium chlorate for some weeds and better on others, ammonium sulfamate is nontoxic to animals and without fire hazard. It is apparently quite rapidly decomposed by bacteria in the soil so that it may be applied without danger of long time soil sterilization. Ammonium sulfamate appears to be highly effective against poison ivy, the plant being particularly sensitive to treatment with this newer agent. (27-

Various petroleum fractions, including kerosene and gasoline, have a place among herbicides. Coal oil, for example, has given good results in dandelion and plantain eradication in lawns. (22) Crankcase oil, thinned with kerosene, is effective for killing poison ivy, but such mixtures should not be used as sprays where they are likely to come in contact with the bark of valuable trees. (6)

The unpleasant odor of carbon disulfide as well as its noxious fumes are factors which probably militate against its employment by the smaller or home user. It is, however, an efficient weed killer, especially against bindweed in moist soils. (31) It has also proved of value in the control of oak-root fungus. (32)

UITE a number of organic compounds have proved valuable as weed killers and new ones are being added to the list. Thiocyanates have already found an established place in the treatment of pastures and meadows. Less active than chlorates, thiocyanates are said to be without fire hazard and nonpoisonous to livestock. (17) According to Brenchley, (1) ragwort can be eradicated from pastures with a 2.5 per cent solution of ammonium thiocyanate applied at 200 gallons per acre. Heavy dressings, such as ten

pounds per square rod, not only kill all weeds but sterilize the soil for some time; up to about four months in some cases. With two pounds per square rod most of the weeds were killed, but the land was fit for cropping within from two to four weeks. Moreover, leaves on plants grown in thiocyanate-treated soil show a deep green color, possibly as a result of the additional nitrogen supplied by the weed killer.

He states that large isolated weeds such as burdock may be killed by applying dry ammonium thiocyanate to the soil around the base of the stem. The amount varies with the size of the plant; a plant four feet high requiring a teaspoonful of the thiocyanate to destroy it. This, of course, points to the usefulneess of such compounds in eradicating poison ivy. (17) Dissolving five pounds of sodium thiosulfate in three gallons of water provides a solution that may be applied on an area of 150 square feet. The spray, applied with a pressure pump, should completely saturate all the ivy leaves and stems above ground. The ideal time to apply such treatment is toward the latter part of June.

Furfural, obtained chiefly from oat hulls, has found use as a weed killer because of its effectiveness, the ease with which its preparations are handled and in the non-persistency of such preparation in the soil; which facilitates reseeding. Furfural is very toxic to dandelions and other annual weeds, but is quite expensive when used alone. This has led to the preparation of mixtures usually containing kerosene or light petroleum distillates, which themselves have some lethal properties to weeds. One formula for a furfural herbicide contains:

Kerosene		*					×		×	*			45	parts
Xylol	*				*			*			*	*	45	parts
Furfural			0										10	parts

Such solutions may be applied to individual weeds by means of a so-called "dandelion gun" which permits the escape of just the right amount of herbicide. In the so-called broadcast method, in which the weed killer is sprayed on thickly infested areas, the result is the destruction of practically all the vegetation. This may be followed, after a week or ten days,

by reseeding of the area. Usually about 500 gallons per acre will suffice for a substantially complete kill of all annual weeds and weakening of many deep-rooted perennials. (17)

Dinotro-ortho-cresol and its derivatives represent a group of organic compounds that is continuing to provide new types of weed killers. Sodium dinotro-ortho-cresylate, is available commercially under the trade name, "Sinox." A selective herbicide, it is odorless, nonpoisonous to livestock, noncorrosive to metals and noninflammable unless allowed to dry in the container. It has undergone extensive tests and has been found to be valuable in the control of annual weeds in flax, grain and roadsides. (33) Without damaging effects on the soil, the compound is decomposed by microorganisms without leaving toxic residues. (1)

Sodium and copper salts of dinitro-ortho-cresol are also available. Because of the superiorities of these several derivatives, their study has been continued in many quarters. One recent result has been the discovery that dinitro-ortho-secondary butyl phenol may be used to make effective weed killers. Aimed primarily at saving large quantities of oil being used in certain areas as herbicides, its use in emulsified mixtures saves over 90 per cent of the oil ordinarily used. In addition, improved killing powers against certain weeds are obtained. (34)

During the last few months, quite a bit of interest has been drawn to a new type of weed killer. Tests done by workers of the U. S. Department of Agriculture (35,36)° have shown that 2, 4-dichlorophenoxyacetic acid-mercifully shortened to 2-4-D shows promise as a selective herbicide. Investigations show that the 2-4-D, in quite extreme dilution, gives good results in killing weeds in grass plots, lawns and pastures without damaging the grass. It may also prove useful against some weeds in grain fields. In these experiments, 13/4 pounds of 2-4-D and 9 pounds of a commercial spreader ("Carbowax") in 225 gallons of water provided enough solution for one acre of grass.

(Turn to Page 119)

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## CONCENTRATED INSECTICIDES

preliminary studies of the use of concentrated sprays against houseflies and mosquitoes

BY

Arthur W. Lindquist, H. O. Schroeder and E. G. Knipling

Bureau of Entomology & Plant Quarantine U.S.D.A.

OUSEHOLD insect sprays usually contain a minimum of toxicant in an oil solution, and nearly all laboratory testing procedures are based on the use of a minimum of active ingredient in a large volume of diluent. The writers have worked on the idea of using a high concentration of an insecticide but smaller amounts of total spray. The amount of active ingredient is the same in either case. If 1 ml. of a spray containing 10 per cent of toxicant is as effective as 10 ml. of a 1 per cent spray, as is shown in this report, it is obvious that the more concentrated solution has many advantages, provided the rate of delivery is adjusted to prevent wastage. In time of war, when shipping space is at a premium, the use of concentrated insecticides seems especially desirable.

This paper presents data on the effectiveness of concentrated sprays as determined by biological tests on houseflies, Musca domestica L., and mosquitoes, Anopheles quadrimaculatus Say. New types of equipment developed for dispersing the concentrated spray solutions are indicated.

A biological method of testing the effectiveness of aerosols and sprays has been developed. It consists in carrying insects in small screen-wire cages into large rooms (5,000 to 9,300 cubic feet) at various intervals after discharging the insecticide and exposing them for a short period, mosquitoes for 1 minute and flies for 5 minutes. Immediately after exposure the insects are removed from the room and transferred to clean cages. Records are then made of 10- and 30-minute knock-down and 24-hour mortality.

#### Concentration of Sprays

Results of tests with sprays containing the same dosage of DDT (96.8 mg.) in different amounts of diluent are given in table 1. A De Vilbiss paint sprayer was used at a pressure of 25 pounds. The diluent used was kerosene, but at the highest concentration it was necessary to add a small amount of an auxiliary solvent in order to get all the insecticide into solution. At all intervals between spraying and exposure the solution containing 16 per cent of DDT applied at the rate of 0.6 ml. of total spray per 1,000 cubic feet gave approximately the same mortality as the solution containing 1 per cent of DDT applied at the rate of 9.68 ml. per 1,000 cubic feet.

When pyrethrum was tested in dilute and concentrated solutions, no significant difference on kill of flies was observed. In one series of tests 10 ml. of 0.2 per cent pyrethrins gave an average mortality of 39 per cent while 0.5 ml. of 4 per cent pyrethrins gave 31 per cent mortality. Probably most insecticides used on household insects will produce similar results.

DDT has powerful killing action, but its knock-down properties are poor; pyrethrum, on the other hand, produces excellent knock-down but poor kill. The combination of these two insecticides has given excellent results in the aerosol formulas (Lindquist et al. 1945), and it was believed that the same could be expected from the concentrated sprays. Combinations of these insecticides have been given a number of tests.

A spray containing 20 per cent of DDT and 2 per cent of pyrethrins plus an auxiliary solvent in kerosene has proved to be essentially as effective as lower concentrations in larger amounts of spray. Only 0.5 ml. of this spray is required to obtain a dosage of 100 mg. of DDT and 10 mg. of pyrethrins, thus with the proper

Method of Testing

<sup>\*</sup> This work was conducted under a transfer of funds, recommended by the Committee on Medical Research, from the Office of Scientific Research and Development to the Bureau of Entomology and Plant Quarantine.



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dispensing equipment a small amount of the solution will treat a large space. The data in table 2 show that equivalent dosages of the active ingredients at these concentrations are nearly as effective as the 10 and 15 per cent DDT solutions containing 1 and 1.5 per cent of pyrethrins, respectively.

An ordinary household sprayer was rebuilt by substituting a 0.017-inch (I.D.) capillary tube for the customary large siphon tube. The performance of this sprayer was compared with that of the De Vilbiss paint sprayer using 1.2 ml. per 1,000 cubic feet of a spray containing 8 per cent of DDT. The results in table 3 show no significant difference in mortalities of flies or mosquitoes with the two types of sprayers.

With the valuable information that a capillary tube in a common household sprayer gives a surprisingly slow settling rate, the next procedure was to incorporate this idea in a compact, pocket-size sprayer for dispensing concentrated solutions. Models have been built which weigh considerably less than a household sprayer or a 1-pound aerosol "bomb."

#### Concentrated Sprays and Aerosols

Considerable work has been done on comparing the effectiveness of aerosols and sprays. The aerosols used contained 3 per cent of DDT, which at the present time is the practical limit in a dichlorodifluoromethane (Freon-12) aerosol, but the sprays contained 10 per cent of this insecticide. The data in table 4 show that the sprays produced with the pocket-size sprayer are essentially as effective as aerosols when exposure is made 1 minute after discharge of the insecticide, and nearly as good at later exposures. It should be noted that only 1 ml. of the spray was necessary, whereas 3.3 grams of the aerosol was used. It should be kept in mind that these exposures, as well as the earlier exposures, were for only 5 minutes. Greater mortality has been obtained by employing longer exposure periods. The ordinary sprayer did not give good initial kill and gave poor results on later exposure, indicating that the spray produced settled rapidly.

Table 1.—Comparative effectiveness against houseflies and mosquitoes of sprays containing the same amount of DDT (96.8 mg. per 1,000 cubic feet) but in varying concentration in kerosene diluent. Average of 3 tests.

				Houseflie:	5		Mosquitoes	
Common		Interval between	Kn	ock-down in	-	Kn	ock-down in	1-
Concentration of DDT	Dosage of Total Spray		10 Mins.	30 Mins.	Kill in 24 Hrs.	10 Mins.	30 Mins.	Kill in 24 Hrs
1%	Ml. per 1,000 cu. ft.	Mins.	96	7%	%	e;	%	. %
1	9.68	1	22	91	99	9	90	97
		15	0	6	86	0	28	55
		30	0	1	70	0	3	37
		60	0	0	26	0	1	16
4	. 2.42	1	19	61	100	4	88	99
		15	0	7	77	0	22	56
		30	0	1	62	0	7	27
		₹ 60	1	1	23	1	1	13
8	. 1.21	1	38	71	99	8	87	96
		15	1	11	83	1	21	69
		30	0	5	56	0	4	30
		60	0	0	45	0	0	18
16	. 0.60	1	30	65	100	1	85	97
		15	1	9	71	0	13	58
		30	0	2	53	0	0	21
		60	0	0	25	0	0	6

Table 2.—Comparative effectiveness against houseflies and mosquitoes of three highly concentrated sprays. Dosage 100 mg. of DDT and 10 mg. of pyrethrins per 1,000 cubic feet. Average of 5 replications.

			Interval		Houseflie.	5		Mosquitoe.	5
Spray	Formula		between	Kno	ck-down in	1-	Kno	ck-down in	
DDT	Pyrethrins	Dosage of Total Spray	Spraying and Exposure	10 Mins.	30 Mins.	Kill in 24 Hrs.	10 Mins.	30 Mins.	Kill in 24 Hrs
%	%	Ml. per 1,000 cu. ft.	Mins.	%	%	%	e,	7%	%
10	1	1	1	86	95	100	95	100	100
			15	13	10	64	36	86	90
			30	1	1	35	15	57	41
			60	0	0	4	0	7	9
15	1.5	.66	1	95	99	100	80	95	98
			15	6	7	63	30	78	81
			30	1	0	24	3	32	37
			60	0	0	5	0	3	4
20	2	.5	1	82	86	99	83	97	99
			15	7	8	66	22	67	71
			30	- 0	0	25	6	41	34
			60	0	0	5	1	3	6

Table 3.—Comparison of effectiveness of a De Vilbiss and a capillary hand sprayer in applying DDT spray. Dosage, 1.2 ml. of spray per 1,000 cubic feet. Average of 3 tests.

			Houseflies			Mosquitoes	
	Interval Between	Kn	ock-down in	_	Kn	ock-down in	-
Type of Sprayer	Spraying and Exposure	10 Mins.	30 Mins.	Kill in 24 Hrs.	10 Mins.	30 Mins.	Kill in 24 Hrs
	Mins.	%	%	%	P/0	%	56
De Vilbiss	1	37	95	99	2	94	94
	15	1	19	69	0	9	53
	30	0	1	51	0	0	11
	60	0	0	6	0	0	6
Capillary hand	1	38	87	99	0	65	89
	15	2	24	77	0	8	72
	30	0	4	50	0	1	28
	60	0	0	7	0	0	6



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Goodhue (1942) determined by a colorimetric method that a spray settles much more rapidly than an aerosol, but Burdette (1938) had previously demonstrated that finely atomized sprays remain suspended in the air for considerable periods of time, and also that particles from 1 to 10 microns in diameter give the best kill of honeybees Apis melifera L. The biological tests reported herein demonstrate that a finely divided spray will remain suspended in the air almost as long as a liquefied-gas aerosol. Preliminary studies of particles deposited on slides indicate that there is very little, if any, difference in size or abundance of particles between the spray and the aerosol.

A comparison of a Freon aerosol and a concentrated spray at sublethal dosages (table 5) indicates that they are equally effective on the basis of 24-hour mortality but that the aerosol produces a somewhat faster knockdown. In these tests no attempt was made to study the effect of delayed exposures.

A number of tests have been made to compare an aerosol and a concentrated spray against free-flying insects in rooms. The formulas were the same as in the preceding tests. The aerosol was applied at the rate of 3.3 grams and the spray at 1 ml. per 1,000 cubic feet. There was practically no difference in the rate of knock-down or mortality between the two types of sprayers.

#### Conclusion

The advantages of concentrated sprays are considerable, especially in time of war, but the success of their use depends on adequate equipment for dispersing the solutions in a fine mist at a rate that will prevent overdosages. It is considered amazing that as little as 0.5 ml. of a solution will effectively treat 1,000 cubic feet of space, which would require from 10 to 24 ml. of ordinary diluted sprays. In a practical sense this means that a sprayer having a capacity of 75 ml. (2.7 fluid oz.) of solution, which is easily portable, will treat 150,000 cubic feet, a space which would require approximately 21/4 quarts of O.T.I. (Official Test Insecticide) spray

Table 4.—A comparison of the mortality of houseflies and mosquitoes exposed at intervals after discharge of insecticide from an aerosol bomb, a pocket-size sprayer, and a household sprayer. Dosage, 100 mg. of DDT and 10 mg. of pyrethrins per 1,000 cubic feet.

	Dosage	of			Interval	I	louseflie	5		Mosquit	oes
Method of	Concen- tration		Spray 1,000		between	Kn	ock-down	ı in	K	nock-dor	ton in
Application			ft.)	1 ests	Spraying and Exposure	Mins. 10	30 Mins.	Kill in 24 Hrs.	10 Mins.	30 Mins.	Kill in 24 Hrs
	%			Number	Mins.	%	%	. %	96	%	%
Aerosol*	3	3.3	gm.	7	1	96	94	100	96	99	100
					15	13	27	74	63	92	93
					30	5	6:	44	25	72	59
					60	2	2	9	3	13	12
Pocket-siz	e.										
sprayer	10	1	ml.	15	1	79	94	100	89	99	100
					15	7	14	60	42	87	82
					30	1	1	44	20	56	44
					60	0	0	18	7	17	14
Household	1								500	,	
sprayer	10	1	ml.	15	1	46	50	95	70	92	97
					15	0	0	40	8	45	47
					30	0	9	29	6	15	11
					60	0	0	3	1	3	5

<sup>\*</sup> The aerosol was a standard formula containing the same active ingredients as the spray.

Table 5.—Comparison of an aerosol containing 3 per cent of DDT and 0.3 per cent of pyrethrins and a concentrated spray containing 10 per cent of DDT and 1 per cent of pyrethrins dispensed through a pocket-size capillary tube spray, both applied at sublethal dosages against houseflies and mosquitoes. Average of 10 tests.

				Houseflies			Mosquitae	2
Dos	rage	Method	K	ock-down in-	_	K	nock-down	и
Pyrethrin	s DDT	Application	10 Mins.	30 Mins.	24 Hrs. Kill in	10 Mins.	30 Mins.	Kill in 24 Hrs.
Mg. per 1	,000 cm	ft.	%	%	76.	. %	%	%
· 2	20	Aerosol Spray	12	14 8	64 60	51 21	82 66	83 73
4	40	Aerosol	33	45 38	86 89	78 57	92 87	94 90

if finely atomized and about 1 gallon if dispersed from ordinary sprayers. Concentrated sprays may be very useful in treating large buildings, such as warehouses, stores, and restaurants, with small power equipment. These sprays eliminate the necessity of producing the objectionable heavy fog required when using dilute solutions. A considerable economy of oil supplies could be effected by a greater concentration of insecticides in sprays. Use of a capillary siphon tube makes cleanliness of solution and equipment essential.

#### Summary

Data are presented showing that sprays containing DDT or pyrethrum, or a combination of the two, will give as good a knock-down and kill of houseflies and mosquitoes in concentrated as in dilute solutions, provided the amount of active ingredient is the same. It is necessary, of course, to disperse the solutions in finely atomized spray form. DDT was as effective in a 16 per cent solution as in a 1 per cent solution. A practical formula contains 20 per cent of DDT plus 2 or 3 per cent of pyrethrins plus an auxiliary solvent in kerosene.

Fine-mist sprays have been found to compare favorably with lique-fied-gas aerosols when tested on a biological basis. Houseflies exposed for 5 minutes as long as 30 minutes after discharge of either an aerosol or a spray showed a high mortality. A Freon aerosol and a concentrated spray dispersed in a pocket-size capillary-tube sprayer at sublethal dosages were equally effective on the basis of 24-hour

(Turn to Page 119)

## FOR REPEAT SALES

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## FORTIFIED RED SQUILL

## ... an efficient rodenticide

BY

By Leonard R. Parkinson

Massachusetts State College

ONTINUED improvement in methods employed in the production of fortified red squill has made available to pest control operators and the general public, an extremely efficient raticide, but the effectiveness of this product is entirely dependent upon proper usage. Correct procedures in its use can best be learned from men in the Fish and Wildlife Service and the Pest Control organization who have been in close contact with red squill development from the start.

Red squill has been belittled, and not without cause, by many unfortunate operators who bought what was represented to be highly toxic squill and suffered embarrassment and loss of good will when they tried to use it. Naturally, they blamed the importers for having sold them an inferior product, but the fact is that most of the importers were acting in perfectly good faith, having purchased what they believed to be a highly toxic squill

The problem of securing good quality squill was investigated by researchers from the Fish and Wildlife Service and the Massachusetts Agricultural Experiment Station in the early 1930's and as a result of their investigations, squills of better quality began to appear on the market. Several methods were proposed for the determination of the toxic values of red squill. About 1940 the Fish and Wildlife workers at the Denver laboratory devised a method for the fortification of raw red squill, a process whereby a poor quality squill might, through special treatment, be rendered highly

toxic and well suited for rat control. Based on the Fish and Wildlife method, but with some modification, fortified red squill is now being produced at a toxic level which ranks it with the best raticides. Economically, it has few, if any, superiors.

The ready availability, the comparatively low cost, the usability and safety features of fortified red squill powder or extracts make it an attractive item to add to a commercially prepared rat bait. During the next few months a variety of commercially prepared squill baits will undoubtedly be offered for sale. Although many of these will be good, others will be much less effective, and the difference in effectiveness will be determined in the majority of instances, by two factors: strength and carrier. Some manufacturers will attempt to reduce the recommended squill concentration with the hope of increasing their margin of profit. It need hardly be said that such "economy" is unwise, for sales and reputation will rapidly decrease as the bait fails in its intended purpose. The second factor, that of carrier for the squill, presents more of a problem. Carriers will of necessity have to vary, for no carrier is entirely satisfactory under all conditions. Commercially prepared baits sold in one section of the country might have a grain base, while in other sections a meaty or some other type of base might be indicated. Selection of carrier will, therefore, depend upon the eating habits of the rat population of the area where the baits are intended to

The Fish and Wildlife Laboratory at Denver has set the standard for fortified red squill as 1.d. 50 of 500-600 mg/kg., and any fortified squill that is offered for sale should meet this standard. On this basis the recommendation for an effective raticide calls for the addition of fortified red squill (500-600 mg/kg) to a carrier that is attractive to rats, in the proportion of one part of squill to nine parts of carrier. The use of less than ten per cent is definitely not encouraged, for it will frequently lead to unsatisfactory results. The use of ten per cent may seem excessive to many manufacturers and pest control operators, but in the composition of any bait intended for a poisoning operation, an amount in excess of a lethal dose is necessary in order to provide for rats with abnormal feeding habits or rats which may be particularly resistant to the poison being used. Field and laboratory tests have indicated that a rat will ordinarily consume, at one feeding, an amount of food equal to approximately one per cent of its body weight. Cn this basis a rat weighing 200 grams may be expected to consume approximately two grams of bait, which would contain 200 milligrams of squill. This consumption would be at the rate of 1000 mg/kg or considerably in excess of a lethal dose. Furthermore, this proportion allows for the rat that may consume less than one per cent of its body weight, and increases the probability of his consuming enough for a lethal dose. This principle should be carefully observed by the pest con-

## WHY POST-WAR PYROCIDES WILL DO A BETTER JOB

When the Government decided to use all the available supplies of pyrethrum in Aerosol Bombs for malaria control, industry was faced with some new problems. Among them was the problem of producing on a commercial scale a pyrethrum extract free from the resins and waxes that occur naturally in pyrethrum flowers.

Extracts were then available which were about 90% soluble in liquid "Freon" which is used in Aerosol Bombs, but none was entirely satisfactory. The first efforts toward improvement produced extracts which were about 96% soluble, but even greater purity was necessary. Study of the problem by McLaughlin Gormley King Company sci-

entists resulted in an extract, "Pyrocide 160," so pure that 99.25% to 99.50% is soluble in "Freon." With "Pyrocide 160" as a standard, it became possible for the Services to demand that the whole industry produce better extracts. For example, U. S. Navy specifications now permit only extracts which are 98.5% soluble.

Just as "Pyrocide 160" now leads the field and is the preferred pyrethrum extract for war use, we believe "The Pyrocides" will set the standards for the industry in the post-war period. The new process for making "Pyrocide" free from impurities will also make these purer, better pyrethrum products for your post-war use:

PYROCIDE 20—The original, standardized, concentrated clarified pyrethrum extract, but purer, and freer from color, odor, and irritating impurities.

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commercially available." Eight times as strong as PYROCIDE 20, PYROCIDE 160 is 99.25% to 99.5% soluble in "Freon." When you pack Aerosol Bombs for your customers after the war, the superior purity of PYROCIDE 160 will give you fewer packing problems and better Bombs to sell.

DRY PYROCIDE—The original stabilized solid pyrethrum concentrate for making horticultural dusts. The new process makes it easier to mix with diluents, and the resulting dust flows more freely—will do an even better job.

At present, pyrethrum is restricted to use by the Armed Forces. When we can offer you pyrethrum again, you will like these better products.

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## **PYROCIDE 160**

\*

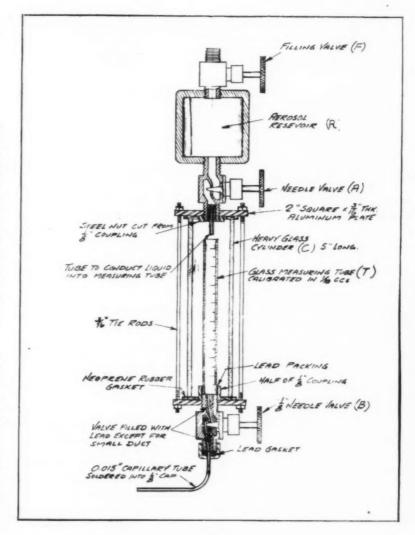
## New Sprayer for Testing Aerosols

By
George H. Batt
Stanco, Inc.

ETERMINATION of comparative killing power of Aerosol solutions frequently presents difficulties because of the small quantity required for each test which must be sprayed from a container maintained under a pressure of the order of 50 to 100 pounds. For example, in the Peet-Grady test only from 3/4 to 1 gram of aerosol is needed to give a 50 per cent kill on flies and a smaller amount when using mosquitoes. For reliable results it is essential to measure accurately the quantity sprayed, to atomize it efficiently and to keep the concentration of the mixture constant.

The sprayer described accomplishes all these features with greater ease than other sprayers which the writer has examined. It consists of an aluminum reservoir (R) having a 100 gm. capacity and closed by two 1/8" needle valves (A) and (F). The lower valve is connected to a glass pressure chamber which contains a calibrated glass tube (T) made from a 2 mm. pipette. The aerosol mixture from the reservoir is allowed to drip into the tube (T) by opening valve A slowly. Then the measured amount in tube (T) is sprayed through the capillary tube by opening valve B.

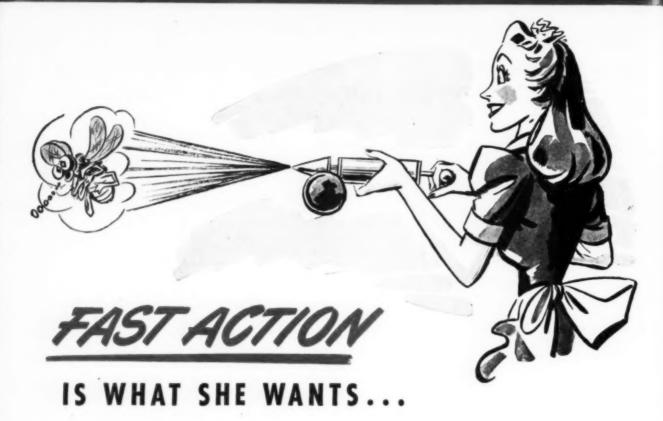
To fill the sprayer it is first thoroughly cleaned to remove any forcign material that might plug the nozzle, and evacuated. The reservoir is filled with 100 gms. of aerosol from a container, then the entire sprayer is tipped sideways about 45° and valve A opened for a short time. This allows some of the mixture to run into the area between the heavy glass cylinder C and the small measuring tube T. A



few grams is sufficient since its only purpose is to maintain a pressure equal to the aerosol mixture (about 70 lbs. per sq. in.) in the measuring device. The sprayer is now tipped back to the vertical position and ready to use.

Valve A is opened and the desired quantity admitted into tube T. (Should too much enter it can be removed by opening valve B and releasing the aerosol through the capillary tube.) After the proper amount is in tube T, the capillary is pointed into

the Peet-Grady room, and the measured volume sprayed in. As the volume in the measuring tube diminishes, the aerosol between the glass cylinder and the measuring tube vaporizes and pushes out the measured amount at a constant pressure. When the liquid in tube T is gone, only gas escapes from the capillary. This causes the aerosol between the glass cylinder and tube to boil and foam indicating that the entire measured quantity has been sprayed.



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1. SPEED OF ACTION is number one in the combination of desirable properties that has made the Lethanes the standout synthetic insecticide concentrates for more

than fifteen years. Other properties in "the combination that counts" include:

- 2. UNIFORMITY You can count on each batch of Lethane concentrate for uniform excellence in quality, because all Lethane is standardized both chemically and biologically.
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- 6. LESS IRRITATION—you can easily prove to yourself in a few minutes, by a simple spray test, that household sprays based on Lethane 384 Special are less irritating than those made with other available toxic agents.
- 7. MILD ODOR Lethane concentrates are mild, easily

perfumed.

Pioneer synthetic insecticides . . .

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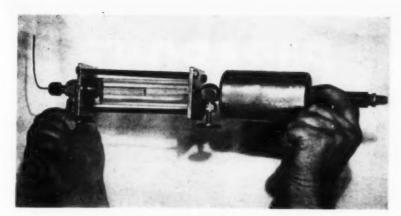
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The sprayer assembled and ready for use

The construction is relatively simple and self-explanatory from the drawing. However, it is quite important to fill the voids in valve B with solder, leaving only a small hole to conduct the aerosol.

The aluminum reservoir and plates were selected because of their light weight. Four 6 in. pieces of 3/16 in. welding rod were threaded on both

FORTIFIED RED SQUILL

(From Page 115)

#### CONCENTRATED INSECTICIDES

(From Page 113)

mortality, but the aerosol caused a somewhat faster knock-odwn.

Equipment for dispersing these sprays has been designed, and models of small pocket-size sprayers have been built which show much promise. They weigh considerably less than a 1-pound aerosol container or the usual type of household sprayer.

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ends and used in place of bolts to hold the glass cylinder tight against the neoprene packing. The sprayer described has been used satisfactorily for the past eight months in the Stanco laboratories and has been found to give remarkably consistent results in all tests. Larger sprayers, constructed in a similar fashion, and used in a room of 700 cu. ft. capacity functioned equally as well.

trol operator when he is preparing a squill bait for field work.

It should be borne in mind that in the testing of commercially prepared squill baits for toxicity ratings, the above recommendations will be considered. Furthermore, if a commercially prepared squill bait is to be approved for field use by the Fish and Wildlife Division, as well as this laboratory, it must meet the following specifications: When fed to a series of not less than 20 male rats at a one per cent level, (i.e., feeding the rats at the rate of ten grams per kilogram of rat weight, or 10,000 mg/kg.) it must produce a "kill" of 90 per cent or bet-

It is not the intention of the writer to imply that fortified red squill is the solution to all rat control problems, for it certainly is not a cure-all. I have simply pointed out that the fortified red squill now available to the

t: ade is very adaptable to the needs of the pest control operators as well as potential manufacturers of squill baits. This product when used in accordance with the recommendations set forth above, will yield effective and encouraging results.

#### METALLIC SOAPS

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#### CHEMICAL WEED KILLERS

(From Page 107)

As yet, the cost of such treatment is quite high, but with wider use of the requisite materials, the procedure will become much less expensive. Already considerable valuable data has been obtained on the mode of action of 2-4-D and the kind of weeds against which it is most effective. However, investigations are still going on, not only in government-sponsored agencies but in private industry as well. The results of these studies should prove most interesting.

Weed killers offer a promising group of specialties for manufacturers willing to delve more deeply into their uses and production. Some indication of their value has been attempted in this brief discussion. Those who are interested will find a rich mine of information in the voluminous literature on the subject.

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#### Hollingshead Maintenance Film

R. M. Hollingshead Corp., Camden, N. J., is distributing a sound film in color featuring a trip through its plant and laboratories.

#### **NEW PATENTS**

(From Page 73)

No. 2,375,626, Soap antioxidant, patented May 8, 1945, by Elmer W. Cook, New York, assignor to American Cyanamid Co., New York. Soap stabilized against discoloration and rancidity by the presence therein of stabilizing amounts of a biguanide sale of a p-tertiary amylphenyl phosphoric acid, said soap being an alkali metal sale of a fat acid.

No. 2,375,774, Stabilization of Rotenone Preparations, patented May 15, 1945, by John Carl de Jonge, Grand Rapids, Mich. The process of manufacturing a stabilized product of the class described, which consists essentially in impregnating starch with a solution of a rotenonical dissolved in a volatile solvent; removing the solvent by evaporation; suspending the resulting toxic-impregnated starch composition in a solution of at least one of the soluble salts of the group consisting of copper-, zinc-, tin-, lead-, manganese-, and alkali earth metal-salts, the metals of which are precipitated by a reagent from the group consisting of dilute alkalis, carbonates, and bicarbonates; gradually adding such reagent to the suspension-containing solution and agitating the same until substantially complete reaction has occurred, where by the metals of the salts become insoluble constituents in the composition, the impregnated starch becomes insolubilized, and the rotenonical becomes stabilized; and seperating the so stabilized insolubilized product.

No. 2,376,096, Detergent Composition, patented May 15, 1945, by Foster Dee Snell, New York, assignor to Foster D. Snell, Inc., Brooklyn. A cleansing composition in dry form comprising an intimate mixture of a water soluble fatty acid soap and a soap builder consisting of a sodium borate having 1.1 to 2 mols of sodium oxide to one mol of boron trioxide, the proportion of sodium borate being substantial but no above 5 parts of the borate to one part of the soap.

No. 2,376,327, Demothing Product, patented May 22, 1945, by Faw Yap Chuck, San Francisco, assignor to Lindauer and Co., San Francisco, a copartnership consisting of Earl Marioni and Arthur G. Lindauer. As a new article of manufacture, fragments of cedar wood impregnated with a solution containing paradichlorobenzene, ethylene dichloride, a hydrocarbon solvent, and glycerin, the glycerin component of said solution being sufficient to reduce the volatilization of the paradichlorobenzine and ethylene dichloride and to promote the volatilization of the natural volatile constituents of the cedar wood.

No. 2,376,499, Soap and Method of Producing, patented May 22, 1945,

by Paul R. Mosher, Wilmington, assignor to Hercules Powder Co., Wilmington. The method of producing a spray processed powdered soap which comprises discharging at a temperature between about 200 and about 325°F. and a pressure between about 40 and about 300 pounds per sq. in. drops of liquid soap comprising a reaction product of a caustic alkali and a rosin and a reaction product of a caustic alkali and a material selected from the group consisting of fats, oils, and fatty acids, said liquid soap having a total moisture content between about 13 and about 67 per cent on a dry basis, into an atmosphere having a temperature between about 200 and about 500°F. under conditions adapted to remove sufficient moisture from the liquid drops to produce the soap in powdered form and having a moisture content not greater than about 13 per cent on the basis of the dry soap.

No. 2,376,650, Fungicidal and Bactericidal Compositions, patented May 22, 1945, by Donald K. Ballman, Midland, Mich., assignor to The Dow Chemical Co., Midland. A fungicidal and bactericidal composition comprising as an active toxicant a mixture of the alkali metal salts of pentachlorophenol and of 2-phenyl-monochlorophenol.

No. 2,376,956, Polishing Composition, patented May 29, 1945, by Robert Brown, New York. A polishing composition containing a wax and the reaction product of an alkali and a paste composed of ground roasted coffee bans and a fatty material, the weight of alkali being less than that of the coffee beans.

No. 2,377,066, Cleansing Compositions, patented May 29, 1945, by William Baird, Arthur Hill, John Edmund, Guy Harris, Stephen Hellicar Oakeshott, and Wilfrid John Wilson, Manchester, England, assignors to Imperial Chemical Industries, Ltd., Great A stabilized pulverulent cleansing composition comprising soap; an alkali salt selected from the group which consists of sodium carbonate, sodium bicarbonate, borax, sodium silicate, and trisodium phosphate; an oxidizing agent selected from the group which consists of sodium perborate and sodium percarbonate; and from 0.001 per cent to 0.1 per cent by weight based on the total weight of said composition, of a stabilizing agent having the general formula

R-CH=N-CHX-CHX-N-CH-R wherein R represents an o-hydroxy aryl radical selected from the group which consists of unsubstituted o-hydroxy aryl residues, and alkyl and alkoxy ring-substituted o-hydroxy aryl radicals, said R's being the same or different radicals, and X represents a radical selected from the group which consists of hydrogen and lower alkyl



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From Current Literature in the Sanitary Products Field

#### New Uses for DDT

A striking reduction in the number of houseflies (Musca domestica L.), which persisted for more than 4 weeks, was obtained by a single spraying of the walls and ceiling of poultry pens and killing rooms with a 2 per cent solution of DDT in deodorized kerosene. DDT was equal to phenothiazine and superior to thiourea and borax in controlling the breeding of houseflies and Themira putris in poultry manure. D. O. Wolfenbarger and E. Hoffmann. Poultry Sci. 23, 545-6 (1944).

#### Insecticide and Germicide

The material is a mixture of (1) an insecticide such as pyrethrum, rotenone extract or nicotine; (2) a germicide such as carbolic acid, resorcinol, hexylresorcinol, propylene glycol, or thymol; (3) a mutual solvent for (1) and (2) such as alcohol, acetone, diacetone alcohol, methyl ethyl ketone, etc.; (4) a dispersing agent which is a compressed liquefied gas such as dichloro difluoro methane, methyl chloride, carbon dioxide, etc. (1) and (2) should not neutralize each other. Where (4) is a solvent for (1) and (2), (3) may be outitted.

If needed, a carrier or conditioner such as olive oil or deodorized kerosene may be incorporated. The dispersing agent is expected to vaporize quickly and violently when the disinfectant is released, so as to disperse the active ingredient and form an aerosol. The solvent, if used, may be somewhat less volatile. If a relatively nonvolatile solvent is used it should

not be present in excess of 20 per cent. E. R. McGovran and L. D. Goodhue, to U. S. Secretary of Agriculture. U. S. Patent No. 2,358,986.

#### Protection Against Fungi

In laboratory tests the most effective treatment of cotton canvas for protection against attack by fungi, consisted in immersing the canvas in a 10 per cent solution of copper sulfate, wringing out the excess and immersing in a 10 per cent solution of caustic soda. After thorough washing the canvas is heated for 1 hour at 1 atmosphere pressure. For an accelerated rotting test, strips are cut and interlayered with strips of rotten canvas. The treated and untreated strips thus inoculated are stored under conditions of tropical warmth in a moist atmosphere for 60 days. In this test the treated strips lost nothing in breaking strength while the untreated were practically disintegrated. P. Azevado and F. J. Maffei. Anais assoc. quim. Brasil 3, 120-7; through Chem. Abs.

#### Fly Larvae and Pupae

DDT and pyrethrins, dissolved in acetone and added to tap water, to make a series of concentrations of each, were tested on larvae and pupae of the fly, Chaoborus punctipennis. DDT was almost as toxic as the pyrethins. DDT was lethal to the larvae at 1:75 million, but almost twice this concentration was required to kill the pupae. The results suggest that DDT is an effective contact poison for this insect. ML concentrations of DDT required 3 or 4

hours to affect the larvae; toxic doses of pyrethrins caused the moribund larvae to come to the surface. A. W. Lindquist and R. C. Bushland. J. Econ. Entomol. 37, 842.

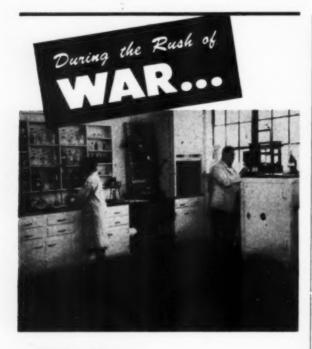
#### Fighting Insects in the Army

For human lice a powder with the following composition (MYL formula) proved most effective in Army use; pyrethrins 0.2 per cent, N-isobutyl undecyleneamide (as synergist for the pyrethrins) 2 per cent, 2,4-dinitroanisole (for ovicidal properties) 2 per cent, Phenol S (as antioxidant) 0.25 per cent in pyrophyllite. For mosquitoes and other flying and biting insects, dimethyl phthalate, Rutgers 612, and "Indalone" were the most effective repellents tested. Rutgers 612 proved most effective against Aedes mosquitoes, dimethyl phthalate against Anopheles quimaculatus; "Indalone" was of little value against the latter insect but was most effective of the three repellents against Stomaxys calcitrans. All repellents were more effective when applied to clothing than to the skin.

In research on repellents, a variety of insect species should be tested; individual variation in the protection afforded by different repellents on different subjects must also be considered. Repellents are usually less effective by users who are under physical exertion and perspiring freely. For protection from chiggers, dimethyl phthalate was more effective and desirable to use. Most effective as the means of application is to the clothing; 1.5-2 ounces will protect a person for a week or more. For ticks, repellent powders proved unsatisfactory; liquid repellents were effective against larval and nymphal ticks but the adults were resistant to them. The three repellents mentioned above, applied to the clothing, are effective repellents for fleas. E. F. Knipling and W. E. Dove. J. Econ. Entomol. 37, 477-80.

#### Silverfish Bait

Wheat-flour baits for silverfish need contain no more than 5 per cent of sodium fluoride as the active ingredient. A. Mallis. J. Econ. Entomol. 37, 842.



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#### Soil Insecticide Application

Application of soil insecticides to secure a lethal concentration in the top few inches of soil is a major difficulty. Both vertical and lateral distribution have to be studied. With carbon disulfide, for instance, effective lateral distribution is from 12 to 24 inches, and injections should be about this distance apart. Vertically, high concentrations can be attained as deep as 18 inches.

With emulsions there is no difficulty in securing adequate lateral distribution or satisfactory kills near the surface, but the problem is to reach the lower layers. Both soil structure and water content cause wide variations in penetration. Chemicals which are lethal to insects are equally toxic to plants. It is therefore necessary to choose the time of application so that the toxic effect will disappear before planting or sowing takes place.

Carbon disulfide is still probably the most useful and reliable soil insecticide. In some circumstances it can be used on growing crops. Its main disadvantage is inflammability. Chloropicrin has given good results at low rates, but it is unpleasant to handle and very toxic to plants. Paradichlorobenzene is not so effective at low soil temperatures and in these conditions its toxicity to plants is very persistent. Naphthalene, the basis of many proprietary soil fumigants, is unreliable, partly because the rates recommended are often below those at which it is toxic. It has a repellent effect at low rates, which has masked its real ineffectiveness as a killer. Cyanides have given some good results but are toxic to mammals. Dichloroethyl ether and methyl bromide have been used successfully. Lead arsenate is slow in action but has given excellent results against Japanese beetles. The compounds listed below have been studied for the effective rate to use in

Chloropicrin .....

Sodium cyanide .....

terms of grams of agent per square meter of soil to be fumigated. H. C. Gough, Manufacturing Chemist 16, 7-9 (1945).

#### Toxicity versus Structure

A study of the insecticidal activity of p.p'-dihalo diphenyl sulfones, sulfoxides and sulfides showed the fundamental toxicity of the watersoluble dye Mitin FF. A remarkable comparison of p-chloro-substituted mothproofing agents and the corresponding p-amino-substituted bacterial chemotherapeutic agents is tabulated. This series was extended to include ammonium and phosphonium types. An extension of this type of investigation to compounds active against flies and gnats led to a study of DDT. The tremendous potency of these compounds and their probable mode of action by absorption through the lipoid membranes of the insect, and the action on nerve endings is discussed.

The idea that the activity of DDT results from the introduction of an inhalation-anesthetic group such as a trichlorinated carbon atom, into the toxic chlorophenyl methane system, is suggested for the devising of new contact insecticides. It seems that a highly potent contact insecticide must contain a toxic component and have a high lipoid solubility. P. Lauger, H. Martin and P. Muller. Helv. Chim. Acta 27, 892-928; through chem. abs.

#### Quantitative Determination of DDT

The amount of DDT in a sample can be determined quantitatively by dehydrohalogenation of the compound under fixed conditions. The method is applicable to the determination of the compound in spray or dust deposits. It is reasonably accurate and reproducible. F. A. Gunther. *Ind. Eng. Chem.*, Anal. Ed. 17, 149-50 (1945).

				Approximate Effective Rate Grams per square meter
				60
*	*		×	40 for most insects 300 for Coleopterous larvae
				50
				40
			*	100
				100

#### DDT in Paint and Enamel

While DDT has been shown by experiment to be effective as an insecticide against flies in oil-bound water paint, there is also a possibility of formulating oil paints and enamels in such a way as to allow the DDT to function as an insecticide. Some outstanding results along this line have been obtained with coumarone resin. It appears that this resin film is even more strongly insecticidal against flies than the original Guesarol E spray powder, in spite of the fact that the DDT is apparently enclosed in the continuous resin film. The enclosure may be more apparent than real, however, as there is evidence that microcrystals of DDT exist on the surface of the film. The freshly dried film is not so insecticidal as the film after drying 24 hours,

The point of particular interest is the property of coumarone resin of increasing the solubility of DDT in those paraffinic solvents in which it is soluble only to the extent of 5-10 per cent. By dissolving DDT in its own weight of coumarone resin by melting them together, this can be dissolved in white spirit so that the final solution contains equal parts of DDT, resin and white spirit. There is evidence that the coumarone resin has the property of conferring increased insecticidal activity to the DDT.

DDT was found especially effective when impregnated on fabrics, the speed of action being surprising, due probably to the particle size and shape. Good results were also obtained with wax floor polishes, although the action here was slower because of the tendency of the waxes themselves to retain the DDT. G. A. Campbell and T. F. West. J. Oil & Colour Chemists' Assoc. 27, 241-62 (1944).

#### Germicide

A germicide is composed of a water-soluble phenolate, a phosphate and a wetting agent. Good results are obtained with a mixture of sodium orth-phenyl phenate and a sodium or potassium phosphate taken in a ratio of 1 to 0.5-6. To this mixture is added 0.5-6 parts of sodium lauryl sulfate. A. M. Partansky, to the Dow Chem. Co. U. S. Patent No. 2,360,269.

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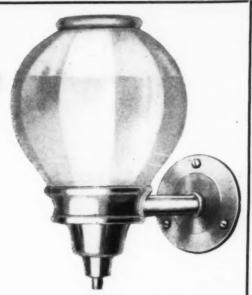
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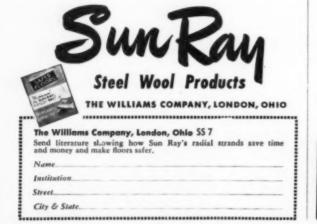
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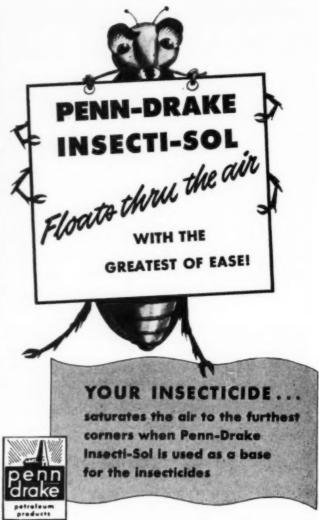




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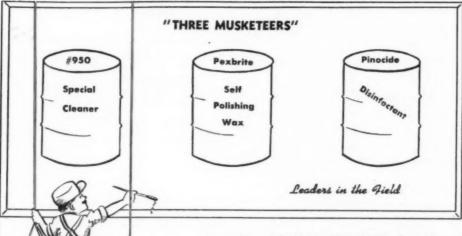
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## TRADE NEWS...

Forms Janitor Supply Co.

A new company, Superior Sanitary Supply Co., Wilmington, Del., to deal in janitor supplies and sanitary equipment, was formed recently by Edward E. Rothstein, formerly manager of Sterling Soap & Chemical Co.

McDonnell Labeling Consultant

C. C. McDonnell, formerly chief of the Insecticide Division, Office of Marketing Services, U. S. Department of Agriculture, who resigned this post a few months ago, has announced the opening of an office as a technical consultant for manufacturers of insecticides, disinfectants and allied products. Dr. McDonnell will be available for consultation on labeling, advertising, etc. Prior to his retirement in March of this year, Dr. McDonnell had been associated with the Department of Agriculture for the past 38 years, becoming chief of the Insecticide Division in 1928 upon the death of Dr. J. K. Haywood. In this position he had general charge of the enforcement of the Insecticide Act of 1910, the Federal Caustic Poison Act and other laws. His consulting office will be located at 122 Hesketh St., Chevy Chase 15, Md.

#### Dr. Alvin J. Cox Retires

Dr. Alvin J. Cox, who has served since 1932 as chief, Bureau of Chemistry, California State Department of Agriculture, retired July 1 under the automatic retirement provisions of the California Civil Service Act. He left his post June 1, spending the final month of his term of service on vacation at his home in Palo Alto. A state civil service examination to choose a successor to Dr. Cox will be announced shortly. In the meantime Allen B. Lemmon is in charge of the Sacramento office.

Dr. Cox is a well known figure in the field of enforcement of insecticidal laws and regulations, and has become widely known outside his own state. He has attended numerous past meetings of the National Association of Insecticide & Disinfectant Manufacturers, and has addressed that group



DR. ALVIN J. COX

on insecticide enforcement problems on numerous occasions. Dr. Cox has also contributed several valuable articles on the same subject to the pages of Soap and Sanitary Chemicals.

He was born in Lawrence, Kansas, in 1875. He attended Stanford University, receiving an MA degree in 1902. He received his Ph. D. from Breslau in 1904. He returned to Stanford to instruct in chemistry, later going to the Philippines where he became director of science of the Philippine Bureau of Science in 1912. Retiring from this post in 1920, he operated as a consulting chemical engineer for the next twelve years until his appointment as chief of the California Bureau of Chemistry. Dr. Cox is a member of Phi Beta Kappa and Sigma Xi.

#### New N.A.I.D.M. Members

Two new firms have become active members of the National Association of Insecticide and Disinfectant Manufacturers, it was announced last month. They are: Zip Manufacturing Co., manufacturers of household insecticides, 508 E. 2nd St., Little

-- • --

Rock, Ark., represented by E. S. Carmack; and Kills 'Em Chemical Co., manufacturers and distributors of insecticides and disinfectants, 1131 Kapahula Ave., Honolulu, T.H., represented by Benet Costa.

Plan Sanitary Supply Survey

Following a meeting of the officers and directors of the National Sanitary Supply Association in Chicago, June 15, it was announced that a survey would be conducted among members and the industry generally so that the association will have factual information on the industry for returning veterans. Information sought in the survey will include: The best method of training and compensating salesmen; marketing data on various essential products; and data on business costs and their relationship to mark-up and profit. Commenting on the survey, S. J. Bockstanz, president of the association, said, "In addition to helping the veteran, many facts will undoubtedly be uncovered that will prove of value to our members." Leo J. Kelly, executive secretary of the National Sanitary Supply Association, will be in charge of the survey. The group also announced revised objectives of the association, following the meeting.

#### Art Director Leaves Hollingshead

Fredinand J. Obeck, for the past 13 years art director of R. M. Hollingshead Corp., Camden, N. J., resigned recently to open his own offices as art consultant, art director and packaging consultant. Mr. Obeck designed more than four thousand containers for the Hollingshead company and has won in national contests four first awards and four honorable mentions. At one time he did art work for the former newspapers North American and Public Ledger, both of Philadelphia, Chilton Co. and several advertising agencies.

#### Chicago Bowlers Elect Morris

R. A. Morris of Orbis Products Corp., Chicago, has been chosen to head the Chicago Perfumery, Soap & Extract Association's Bowling League for the coming 1945-46 season.

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#### Chapter Headings

Sanitary Products Industry The Insect Problem Discovery of Bacteria Principles of Disinfection Coal Tar Disinfectants Cresol Compounds Pine Oil Disinfectants Hypochlorites Formaldehyde Oil Soaps Liquid Soaps Soap Dispensers Floor Waxes

Pyrethrum Insecticides Rotenone Materials Synthetic Insecticides Activators Roach Control Bedbug Liquids Livestock Sprays Sprayers Moth Preparations Deodorant and Urinal Blocks Labeling and Packaging Appendix



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STEWART HOLLINGSHEAD

#### Hollingshead Elects New Officers

R. M. Hollingshead, Jr., has just been elected chairman of the board of R. M. Hollingshead Corp., Camden, N. J., and Stewart Hollingshead, president of the company, following the recent death of R. M. Hollingshead, Sr., founder of the business.



R. M. HOLLINGSHEAD, JR.

T. J. Bagley has been elected vice-president, Weir Mitchell continues as treasurer and Miss Dorothy Butler as secretary. Members of the board include R. M. Hollingshead, Jr., Stewart Hollingshead, Weir Mitchell, T. J. Bagley and Ira Jewell Williams, Sr.

#### Acquire Sanitary Supply Co.

E. P. Lynch, Inc., Providence, R. I., paint distributors, announced June 15, that they had taken over the business of Janitors' Wholesale Supply Co., of Providence. Edward C. Hunter, formerly with the company has joined E. O. Lynch as manager of the sanitary chemicals and cleaning supplies department.

#### List Publications on DDT

The United States Department of Agriculture, Division of Insecticide Investigations, has just released a new and up-to-date bibliography on DDT. Dr. R. C. Roark, who compiled the new list, has assembled some 418 additional and in most cases new articles dealing with DDT to supplement the list of 174 such references included in the first bibliography which was published in June 1944.

#### New Continental Can Plant

Continental Can Co., New York, is now operating its recently acquired 60,000 sq. feet, two story concrete factory building at Watertown, N. Y., for the production of fibre side wall, metal top and bottom

cans, it was announced late last month. Fifty employees are presently employed on the fully automatic production lines. Present shipments are running approximately two cars per day and expansion of present production facilities is contemplated.

#### Aviation Market for San. Supplies

Expanding aviation will open many new opportunities for sales of sanitary maintenance supplies and equipment, the National Sanitary Supply Association reminds its members. One suggested new source of business will be the 16,750 new "airparks" which, it is estimated, will come into existence in the near future. Exploring further for possible markets, the Association's executive secretary, Leo J. Kelly, has discovered an Illinois law requiring all employers in that state to provide soap for lavatories and shower baths. "There is no reason why this provision of the Illinois Act should not be enforced," says Mr. Kelly, in a bulletin to members. "We know of several plants which do not do it. . . . This may be true in other states and communities. Worth checking. Could lead to many new accounts."

#### Lift Sanitation Machine Order

Revocation of Limitation Order L-222, governing production of floor sanding, finishing and maintenance machines; portable rug scrubbing machines; industrial vacuum cleaners and blowers for cleaning purposes was announced last month by the WPB. However, other orders and regulations restricting the use and acquisition of materials for production of these items continue in effect, the WPB pointed out. Under L-222, production of floor sanding machines and portable rug scrubbing machines was prohibited. Production of portable electric hand blowers, industrial vacuum cleaners and floor finishing and floor maintenance machines was permitted in limited quantities under the order. Production of all these classes of equipment will be limited now mainly by availability of materials. In addition, delivery of industrial vacuum cleaners, portable rug scrubbing machines and certain types of floor finishing and floor maintenance machines by manufacturers no longer is subject to specific WPB approval on form WPB-1319. L-222 was originally issued Jan. 8, 1942.

#### Dicalite Names Two Managers

Dicalite Co., New York, announced the appointment recently of R. W. Blunt as manager of the Philadelphia district and E. V. Crossin, manager of the Pittsburgh district. Before joining Dicalite, Mr. Blunt was with Kieckhefer Container Co., in Parkersburg, W. Va. Mr. Crossin's work for the last 13 years has been along engineering lines. He was associated previously with A. W. Burns Construction Co., and Columbia Engineering Corp., both of Columbus, O.

#### Pest Control Convention Off

Cancellation of its thirteenth annual convention was announced by the National Pest Control Association, late last month. Originally it was planned to have an annual meeting sometime in October at the Netherland Plaza Hotel. Instead a meeting of the board of directors will be held, time and place to be announced later.

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#### Revise Insecticide Allocation

The pyrethrum and rotenone schedules (48 and 49) of Order M-300 were amended by the War Production Board on June 7, changing the monthly allocation period from a monthly to a quarterly basis and eliminating the need for filing of applications by insecticide manufacturers. In making the announcement of the change the WPB stated that it was being done to save paper work and should not be taken as an indication that there are greater quantities of pyrethrum or rotenone available.

The WPB announcement lists a series of approved uses for rotenone. These include use against cattle grub, cattle lice and sheep ticks, use on specific commercial crops such as peas, cabbage, beans, asparagus, etc., Victory garden use, and for such other agricultural purposes as may be approved by the WFA.

Subsequent to the issuance of this announcement, which also listed approved uses for pyrethrum, the WPB has announced a further liberalization of pyrethrum controls. Brazilian flowers and by-products of aerosol manufacture are now reported to be completely free from allocation control. They are to be turned over to pyrethrum importers for sale for the following three approved purposes:

1 protection of growing agricultural food crops

2 protection of food processing plants 3 structural pest control service work Pyrethrum flowers for direct military use (Kenya flowers are the only ones which test high enough for this purpose) will continue to be allocated by WPB.

#### Hercules Advances Carter

The appointment of Dr. Richard P. Carter as chief chemist of Hercules Powder Co.'s Mansfield, Mass., chemical plant, was announced in June. Dr. Carter, who for the past two years has been assistant to Raymond F. Schlaanstine, director of operations of the Hercules Synthetics department, succeeds Dr. R. L. Marsh, who resigned. Dr. Carter joined Hercules in July, 1940, after receiving his Ph.D. at Purdue University.



JOHN A. RODDA

#### Goldberg Succeeds Rodda at WPB

John Rodda, who has served since late in 1943 as Chief of the Insecticides & Fungicides Unit, Chemicals Bureau of WPB, will relinquish this post on July 25 and will be succeeded by Melvin Goldberg. Mr. Rodda, who had been assistant chief before taking complete charge of the insecticide unit upon the retirement of Warren Moyer in late 1943, had previously had a broad experience in the insecticide industry extending over a period of seventeen years, part of this time with McCormick & Co., Baltimore. After a short vacation, he is expected to announce his connection with a company in the insecticide field.



MELVIN GOLDBERG

Melvin Goldberg has served with the Insecticides and Fungicides Unit since December, 1941, and has been the one man most closely identified with the aerosol and DDT programs. Mr. Goldberg received his A.B. in Chemistry at Johns Hopkins in 1935 and his M.S. in Chemistry from Georgetown University (Washington) in 1940. Before going into government service he had been employed two years as a research chemical assistant at the National Cancer Institute and two years in the same capacity at the Bureau of Animal Industry. He has served as assistant chief of the Insecticides & Fungicides Unit under Mr. Rodda since 1943.

#### Insecticide Committees Meet

A series of meetings of advisory committees connected with the insecticide industry was held in Washington June 13 through June 15. At the meeting of the DDT Producers Industry Advisory Committee, held on June 13, discussion centered around the policies which some producers of this material have followed in distributing testing samples. Considerable criticism was directed against some reported cases of indiscriminate sampling to uninformed customers. One example of mislabeling was cited in the case of an insecticide manufacturer who incorporated DDT in a finished product which was described as "harmless." A further discussion of the same subject will be continued at a subsequent meeting called for July 18.

#### Report Improved German DDT

Reports brought back from Germany by chemical experts who have been studying the German chemical industry since V-E Day indicate that in all probability the Germans knew about DDT well before the Americans or British and that they have developed numerous improved variations of the product. One of them, called GIX, is said to be a fluorinated version of DDT, with fluorine replacing some of the chlorine atoms. Inquiries at the U.S. Army Chemical Warfare Service disclosed that, for the moment at least, all reference to this product is being clothed in strict military secrecy reminiscent of the mystery which surrounded DDT in the early stages of its development.

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#### Issue Warning Label Guide

The Manufacturing Chemists' Association of the United States, Washington, D. C., announced publication, early in June, of "A Guide for the Preparation of Warning Labels for Hazardous Chemicals." Said to be the first comprehensive systemization and standardization of labeling of hazardous chemicals, it was completed after a year's work by the association.

The principal objective of the work is to discourage depending upon code labels which leave the user with no information about the product. The manual includes detailed definitions of terminology and a classification of hazards, offers recommendations for label cautions to be used with each hazard, suggests labels for experimental samples and gives specimen labels to show how the principle developed in the manual should be applied. Inclusion of the following subject-matter on labels for hazardous chemicals is urged: Chemical name, "signal word" (danger, warning, caution) designating degree of hazard, and an affirmative statement of hazard and precautionary measures covering actions to be followed or avoided.

#### Form New PCO Group

Formation of a Pest Control Operators of Eastern Pennsylvania Association, composed of pest control operators functioning east of the Susquehanna river in Pennsylvania, was announced recently. Firms from Philadelphia, Scranton, Wilkes-Barre, Williamsport and Reading were represented at the first meeting which was held in Philadelphia. Tom Mc-Mahon, assistant to William O. Buettner, secretary of the National Pest Control Association, represented that organization at the first meeting. Dr. James C. Munch, formerly of the U. S. Fish and Wild Life Service, was the guest speaker. President of the new association is W. E. Sharp, of Smithereen Exterminating Co., Philadelphia.

#### **New Sanitary Receptacle**

A new type, "Mypro" steel sanitary receptacle for women's washrooms, available for immediate shipment, was announced late in June by Philip Shore & Associates, Los Angeles. Designed for placement under toilet partitions, the new receptacle measures 9 x 9 x 11½ inches overall. An outer cover with turned edges is finished in smooth, white or green enamel. Other features of the new receptacle are a swing top, and an inner container that can be removed for emptying and washing. Weight of the receptacle is approximately 5½ pounds.

#### McDONNELL ON LABELING

Dr. C. C. McDonnell, formerly chief of the Insecticide Division, Livestock & Meats Branch, U. S. Department of Agriculture, and now a consultant on labeling of insecticides, disinfectants and allied sanitary products, is preparing a series of articles on this general subject—the first installment of which will appear in our August issue. Dr. McDonnell was in charge of enforcement of the Insecticide Act of 1910 and the Caustic Poisons Act over a long period of years, and is admirably qualified from direct, first-hand experience to write on this subject.

#### Test DDT on Cattle Flies

A month-long series of tests with DDT on horn flies was conducted during June on five thousand head of cattle and some dairy cows in 16 Kansas counties, it was announced early last month. Both spraying and dipping methods of testing were to be used. Sponsors of this project are the U. S. Department of Agriculture's Bureau of Entomology and Plant Quarantine, office of the Kansas State Livestock Sanitary Commission, extension division of Kansas State College, southwestern region of the National Livestock Loss Prevention Board and Sears-Roebuck foundation.

#### Los Angeles Chemical Catalog

Los Angeles Chemical Co., I os Angeles, recently issued a 56-page and cover catalog of its chemicals for industry, agriculture and laboratory. The booklet, which is pocket-size: 4 x 9 inches, is printed in two colors and is plentifully sprinkled with illustrations of its offices, manufacturing plant and laboratory, products made and sold by the company, exterior and interior factory scenes, as well as showing products in use. Los Angeles Chemical Co., was organized in 1914 and combines the activities of manufacturer and jobber.

#### N. Y. Sanitary Code Changes

It now appears doubtful that any drastic changes will be made in section 104 of the New York City Sanitary Code, relating to insecticides, and which is now up for revision. This was brought out at a hearing, June 22, under the direction of the chairman of the Fumigant Board. Changes under consideration are inclusion of a color provision, which will probably be made to conform with that of the State code. Also discussed were regulations affecting pest control operators and their methods of procedures. Some objections were raised to these regulations. If the objections are presented in writing they will be considered, it was stated. Another change related to the sale, manufacture, possession, etc. of bactericidal organisms or cultures to be used against Japanese beetles. This was contained in a new section of the code, and would ban their sale, manufacture or possession, etc. The title of the section (104) has been changed slightly to cover insecticides and rodenticides, rather than exterminators.

#### Lipscomb in New Post

Charles T. Lipscomb, Jr., vice-president in charge of the industrial chemicals division since 1942, was recently appointed to the new post of assistant general sales manager by McKesson & Robbins, Inc., New York. His duties as head of the industrial chemicals division have been taken over by F. Dean Hildebrandt, formerly a partner in Hildebrandt & Co., Chicago. Mr. Hildebrandt has been appointed a vice-president. In his new post, Mr. Lipscomb will assist I. H. Bander, vice-president, in directing the sales division of 67 wholesale drug houses.

#### Offer Point of Sale Book

Kay, Inc., New York display manufacturers, have brought out a plastic-bound book entitled, "Building a Comprehensive Point of Sale Program—Objective Domination," the company announced June 23. The book deals with methods for building an integrated point of sale program. Limited edition is offered for examination only by writing the company at 9 E. 40th St., New York 18.

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soft compared to the heart of a post-war purchasing agent. Salesmen are going to reap the harvest of purchasing agents trodden under foot for the past five years. Selling will be tough, — and how! So anything you can do now to help your sales staff later will be all to the good. Advertising in advance can give your salesmen and your products a head start, — can aid in softening the granite heart of a P.A. or two.

If you would keep your products and your firm better known in advance of the competitive battle for post-war markets, and incidentally make a dent on a few granite hearts in the field of soap products, cleansers, insecticides, disinfectants, and allied chemical specialties, we suggest consideration now of regular advertising in

SOAP and Sanitary Chemicals
254 WEST 31st STREET NEW YORK 1

Member Audit Bureau of Circulations

#### Tale Ends

ALTER WINCHELL reported a classified advertisement by the Andrew Jergens Co. in the Cincinnati Inquirer last month as follows: "Positions for women. Typist-clerical: You just have to type a little, write a little, sit at a desk. Think a little. Try a little. We'll show you the rest." His comment was: "Why, Andrew!!!" Ain't that Winchell fellow the card, girls?

Soviet Russia's five-year plans of yesteryear have nothing on the National Assn. of Insecticide & Disinfectant Mfrs. The NAIDM is working on a ten-year post-war plan of "coordinated activities" chiefly scientific in character.

As long as we see those window displays of soap, we know that it has not yet reached the cigarette-scarcity stage.

Up until now, soapers couldn't get enough fibre shipping cases to pack their soap in. Now they can't make enough soap to pack in the fiber cases they can't get.

To date, the surplus of pyrethrum flowers in storage in the United States is said to exceed 4,000 tons. With material still coming in from Kenya, this is a powerful pile of "surplus" pyrethrum. Processors and the industry are becoming more vociferous regarding releasing a considerable portion of this for unrestricted use in household and other insecticide products.

Inadvertently coining a new word, H. A. Nelson, president of the National Ass'n of Insecticide & Disinfectant Manufacturers, at a recent meeting somewhat jumbled up the words, "government regimentation," and came up with "governmentation." It sound news to this department, particularly as it is not a word which might be coined by some smart squirt in a government bureau in Washington.

